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BRONCHIAL ADENOMA

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Bronchial adenoma is one of the most interesting and controversial lesions involving the bronchial tree. The difference of opinion among observers with regard to the exact nature of this lesion, its relation to bronchogenic carcinoma and its proper method of treatment is well known. In order to try to evaluate properly these various factors we undertook the following study. Our observations are based on a review of data on 86 consecutive patients seen at the Mayo Clinic in whom the diagnosis of adenoma of the bronchus was established by microscopic examination of tissue removed from the tumor. No cases were included in which the adenoma originated in the trachea. Complete information was available concerning the course of the adenoma in 74 of the cases. In the remaining 12 cases this information was not complete.

The group consisted of 45 men and 41 women. Their ages varied from 15 to 67 years. The average age of the women was 38 years as compared with 42 years for the men. The average duration of symptoms before the diagnosis was established was thirty months. It would be a grave error to assume that a long period in which respiratory symptoms are present is a necessary prerequisite in establishing a clinical diagnosis of adenoma of the bronchus. Six of the patients under consideration were entirely asymptomatic, and 28 had symptoms of less than one year's duration. The symptoms most frequently mentioned by the patients are listed in table 1.

Roentgenographic examination of the thorax was found to be of considerable importance and value in the study of the patients with adenoma of the bronchus. Sixty-six patients, or 74 per cent, presented roentgenographic pulmonary changes of appreciable significance. In 20 instances the roentgenograms of the thorax were noninformative. Tomography and bronchography were often found of great value in recognition of the lesion.

The great majority of adenomas arise from the primary bronchi and consequently can be readily visualized on bronchoscopy. Occasionally, as Maier and Fischer [1] have pointed out, they may originate in a terminal bronchus and thereby offer greater difficulty in diagnosis. In the present study, 84 of the 86 patients underwent bronchoscopic examination, and the adenoma was visualized in 78, or 91 per cent, of the cases. Biopsy was positive at the time of bronchoscopy in 75 of the 78 cases. This is a higher incidence of visualization than occurs in bronchogenic carcinoma. Adenomas in the majority of instances orginate from the larger bronchi, which can be visualized more adequately by the bronchoscopist. The best explanation for this localization in the larger bronchi is the fact that adenomas originate from the mucous glands in the wall of the bronchus and there are more mucous glands in the large bronchi than in the smaller ones. Furthermore, the mucous glands terminate where the size of the bronchial lumen is between 1 and 2 mm. This is the approximate location at which the cartilage disappears in the bronchus. However, bronchogenic carcinoma originates from the surface mucosa of a bronchus of any size, and it is more frequently seen in small bronchi than is adenoma. The locations of the adenomas considered in the present study are indicated in table 2.

The pathologic features of adenomas have been well described by many authors. It appears to us that two morphologic patterns should be included under this general group of adenomas. This is justified on the basis of the clinical course and general appearance of the tumor. In this series, in 77 of the 86 cases (90 per cent) the lesions were of the carcinoid type and in 9 cases (10 per cent) of the cylindroma type.

Grossly, all adenomas tend to polypoid projection into the bronchus (fig. 1 *A*), but the appearance is frequently like that of an iceberg, in that a part and sometimes only a small part of the tumor is projecting into the lumen of the bronchus (fig. 1 *B*). The remainder is situated in the bronchial wall and in the adjacent pulmonary tissue. At times these tumors will become exceedingly large, and several of the largest in our experience were encapsulated. Infiltration in and around the bronchial wall is present in approximately 90 per cent of bronchial adenomas. The carcinoid type (fig. 2 *A*) tends to have a smaller pedicle than does the cylindroma type (fig. 2 *B*), in which there is frequently a wide base of attachment of the tumor to the bronchial wall.

In the carcinoid type of adenoma several histologic patterns are apparent. In one group vascularity of the tumor is the most dominant observation. In this particular type the cells appear at times even to line the blood vessels. This type of adenoma usually is associated with a clinical history characterized by hemoptysis. The tumor is red and appears hemorrhagic. In other tumors this type of vascularity is less impres-

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1. Maier, H. C., and Fischer, W. W.: Adenomas Arising from Small Bronchi Not Visible Bronchoscopically, J. Thoracic Surg. 16: 392-398 (Aug.) 1947.

sive. The cells may form solid cords or be grouped in alveolar clumps (fig. 3). Acinar formation is seldom a prominent feature.

The cells in the carcinoid type as in the cylindroma type are small, round and regular. Mitotic figures are seldom seen. The cylindroma type presents two types

Fig. 1.—Bronchial adenomas. *A*, the polypoid endobronchial type. There is no infiltration of tumor beyond the cartilage (hematoxylin and eosin × 4); *B*, iceberg-like appearance with infiltration of the bronchial wall beyond the cartilage (hematoxylin and eosin × 3).

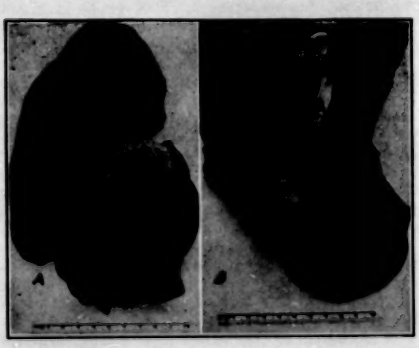

Fig. 2.—*A*, Adenoma, carcinoid type, involving a right lower lobe bronchus and producing a medium-sized mass in the lung; *B*, adenoma, carcinoma type, of the right lower lobe bronchus. Note the extensive base of attachment to the bronchial wall.

of pattern. One is the Swiss-cheese pattern, in which the irregular, roundish and oval spaces are formed by the cells (fig. 4); these spaces are filled with a mucoid secretion. The other is the tubular pattern, in which simple tubules are formed. In both types of adenoma the mucosa is intact over the tumor. This mucosa is not necessarily normal stratified ciliated columnar epithelium but frequently is changed to flattened squamous epithelium. Obviously hemorrhage, when it occurs, must result from a break in the mucosa overlying the tumor, but this rapidly heals over. The intact mucosa explains why the cytologic study of sputum and bronchial secretions consistently gives negative results in these tumors. In differential diagnosis the cell type will frequently resemble that seen in bronchogenic carcinoma with small or oat-shaped cells. We have found that sputum examination is of definite value in the differential diagnosis because sputum usually is positive for carcinoma cells in the small cell type of

Table 1.—*Adenoma of the Bronchus: Symptoms in 86 Cases*

Cough	67	Chills and fever	22
Hemoptysis	49	Dyspnea	21
Pain	38	Wheeze	11

Table 2.—*Adenoma of the Bronchus: Location in 86 Proved Cases*

Right Side	Cases	Left Side	Cases
Upper lobe	7	Upper lobe	9
Middle lobe	3	Lower lobe	15
Lower lobe	19	Main	14
Main	15		
Both lower and middle lobes	3		
Total	47	Total	39

Situation not stated in 1 case

Table 3.—*Adenoma of the Bronchus: Results of Bronchoscopic Treatment in 36 Cases*

	Cases
Living	19
Incomplete follow-up	5
Recurrence of tumor with subsequent operation	6
Died	6 (17%)
Total	36

Table 4.—*Adenoma of the Bronchus: Results of Surgical Treatment in 51 Cases*

	Cases
Exploration only	3
Living and well	40
Dead	8
Total	51

bronchogenic carcinoma and is consistently negative in the adenomas.

Time and experience have demonstrated that adenomas of the bronchus can and do metastasize. Five patients in our series had definitely proved metastasis. In 3 other cases there probably were metastatic lesions, but these were not proved microscopically.

REPORT OF CASES

Case 1.—A man aged 49 (one of the 5 patients who had definitely proved metastasis) gave a history of respiratory difficulty of a year's duration before the diagnosis of adenoma was established. He was found to have an adenoma involving the right main bronchus. This tumor was removed by endoscopic means, and the patient got along well for ten years. Then he again experienced pulmonary bleeding, and reexamination disclosed a recurrence of the adenoma (fig. 5). A right pneu-

monectomy was performed, from which he made a satisfactory recovery. Examination of the removed lung showed that four of the hilar nodes were involved with metastasis from the adenoma (fig. 6). The patient returned two years later complaining of pain in the right lower part of the thorax and the upper part of the lumbar portion of the spinal column. He also had noticed that there was some enlargement of the abdomen. Examination revealed enlargement of the liver. Roentgenograms of the spinal column and pelvis showed osteoplastic changes (fig. 7). Abdominal exploration disclosed a large, nodular liver. A specimen removed from one of these nodules for biopsy was characteristic of adenocarcinoma of the adenoma type (fig. 8). This patient died six months later as a result of hepatic insufficiency.

CASE 2.—A man aged 67 had an adenoma involving the bronchus of the upper lobe of the left lung (fig. 9). The adenoma was removed by endoscopic means. The patient remained symptom free for ten months, when pulmonary symptoms again developed. Bronchoscopic examination revealed that the adenoma of the left upper lobe bronchus had recurred. It was also found that he had an enlarged, nodular liver. The

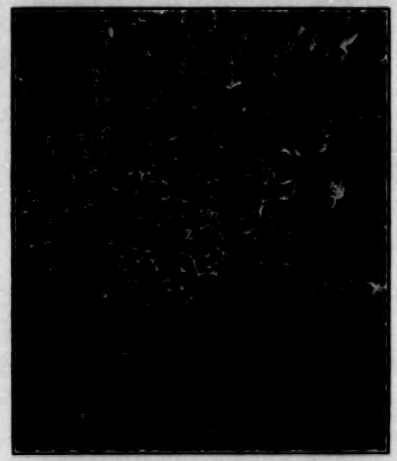

Fig. 3.—Adenoma, carcinoid type: Solid cords of round regular cells (hematoxylin and eosin ×130).

bronchial adenoma was again destroyed bronchoscopically. After this an exploratory laparotomy confirmed the presence of an enlarged, nodular liver. A specimen for biopsy removed from one of the nodules disclosed adenocarcinoma of the adenoma type. This patient was still living ten months later, but he had failed decidedly and was showing definite evidence of hepatic insufficiency.

CASE 3.—A woman aged 34 had an adenoma of the bronchus, which had been discovered incidentally during the course of a community roentgenologic survey for tuberculosis. She had no symptoms referable to the lungs. Bronchoscopic examination revealed a lesion involving the left lower lobe, and microscopic examination of tissue disclosed a cylindroma type of adenoma. The roentgenogram of the thorax revealed, in addition to the lesion in the left lower lobe, a nodule in the periphery of the left upper lobe (fig. 10). Pneumonectomy was performed. The operative specimen contained an adenoma involving the left lower lobe bronchus with a metastatic lesion in the lingular division of the upper lobe of the left lung. This patient was still living and well at the time of writing.

In the remaining 2 cases hilar nodes involved by metastasis were found in the operative specimens.

There exists a decided difference of opinion among observers as to the proper method of treating bronchial adenoma. The decision generally rests between removal or destruction of the tumor through the bronchoscope and surgical eradication by means of lobectomy or pneumonectomy. Both methods of treatment have been

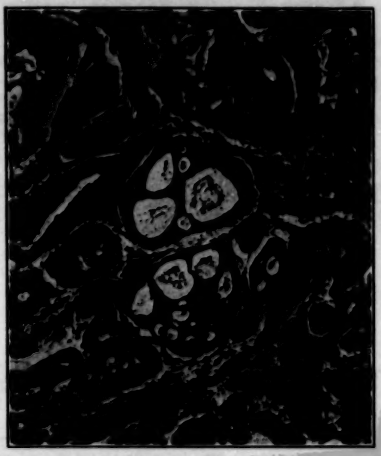

Fig. 4.—Adenoma, carcinoid type: The cells are making spaces filled with secretion. There is a resemblance to Swiss cheese (hematoxylin and eosin × 130).

employed in our cases. Thirty-six patients were treated by endoscopic means, and the results are indicated in table 3. The 19 patients who are still living after the bronchoscopic removal of the adenoma have

Fig. 5.—Recurrent adenoma of bronchus.

been followed one to fourteen years. Thirteen of the 19 patients have been observed for five to ten years, and 4 for more than ten years. One of the 19 patients has had a recurrence of the tumor and metastasis to the liver. This occurred a year after the original removal of the adenoma. The remainder of the patients have remained well.

Of the 5 patients on whom we have not been able to obtain up-to-date information, 2 were observed for ten years, 1 for seven years and 2 for less than three years; they had presented no evidence of recurrence of the adenoma.

Fig. 6.—Adenoma, carcinoid type, in a lymph node. The smaller lymphocytes contrast with the larger tumor cells (hematoxylin and eosin × 130).

Six patients subsequently had recurrence of the adenoma and later required surgical treatment. In 3 cases the lesion recurred two years after bronchoscopic removal, in 1, eight years after, and in 2, ten years after. This experience forcibly emphasizes the importance and necessity of repeated bronchoscopic observation of any patient with adenoma who is treated by endoscopic means. Six of the patients have died. Five of these 6 died within the first year of the onset of treatment, and the other died twelve years later.

Fig. 7.—Osteoplastic metastasis to the spinal column and pelvis.

Forty-five of the patients were treated primarily by means of lobectomy or pneumonectomy, and 6 others had operative intervention secondary to previous endoscopic treatment. The results of surgical treatment in these 51 cases are shown in table 4.

The 3 patients who underwent surgical exploration were found to have complicating factors that militated against extirpation of the lung. Two of these patients subsequently died. The other patient was later treated endoscopically with destruction of the tumor by means of diathermy and implantation of radon seeds into the base of the tumor. This patient is still alive and well five years after treatment. The 40 patients who are living and well after surgical treatment have been followed one to twelve years. Thirteen of the 40 have been observed longer than five years. Of the 8 patients in this group who died, 4 died one to three years after operation. In the remaining 4 cases the death must be charged to the operation. Pneumonectomy was performed in 31 cases, lobectomy in 10 and resection of multiple lobes in 7. Of the patients who died as a result of or after surgical treatment, all but 1 had had pneumonectomy.

Fig. 8.—Adenoma of the bronchus with metastasis to the liver. The hepatic cells are shown at the bottom and the tumor cells at the top (hematoxylin and eosin × 130).

It is of interest to note that 5 of the 86 patients were treated by roentgen therapy alone. These were largely patients who were seen during the earlier period of our treatment of adenoma. One patient was living and apparently well eighteen years later and another was still well when last heard from fifteen years after treatment. Another patient, although still well fifteen years after roentgen therapy, was having further difficulty. The 2 remaining patients are dead, one dying six years after treatment and another two years after treatment. Although it is generally stated that roentgen therapy is of no benefit in the treatment of adenoma of the bronchus, the aforementioned results should cause us to reconsider such an assertion.

It has been our impression that the cylindroma type of adenoma does not respond as well to treatment as does the carcinoid type. Nine of the 86 patients in the

present study had lesions of the cylindroma type. Three of these were treated endoscopically; 2 died and 1 is still living and well at the time of writing. Six were treated surgically; of these, 3 subsequently died and 3 are living and well. Although this group is much too small to permit any definite conclusions, results would seem to bear out our suspicion that the cylindroma type of adenoma is less amenable to treatment than is the carcinoid type.

Fig. 9.—Thorax of a patient with adenoma of a bronchus and metastasis to the liver.

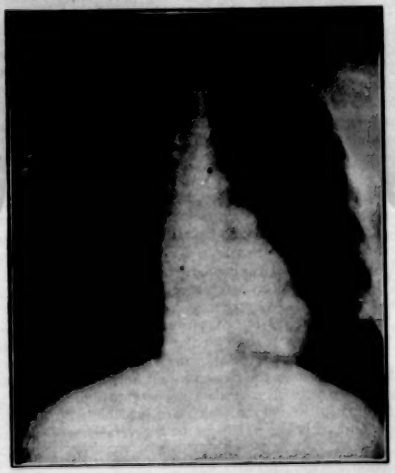

Fig. 10.—Thorax of a patient with cylindroma of a bronchus and pulmonary metastasis.

SUMMARY AND CONCLUSION

Adenoma of the bronchus should be considered a carcinoma of a low degree of malignancy that possesses the ability to metastasize. In our experience, when metastasis occurs to the liver from adenoma of the bronchus, the patient undergoes rapid deterioration as a result of hepatic insufficiency. Bronchial adenoma is a disease that occurs with equal frequency in both sexes. The great majority of adenomas occur in the larger bronchi, although they may occur in any portion of the bronchial tree in which mucous glands are present.

From a pathologic point of view, adenomas may be divided into the carcinoid and cylindroma types. Carcinoid adenomas are the commoner of the two types. In our experience cylindromas as a rule have a wider base of attachment and present a more difficult therapeutic problem than do adenomas of the carcinoid type.

Our experience would lead us to believe that in suitable selected cases surgical extirpation of the lesion is followed by the most satisfactory results. However, the type of treatment to be employed must necessarily vary, depending on the situation of the lesion, the degree of attachment of the lesion to the bronchial wall, the age of the patient and the degree of secondary suppuration. An adenoma which is pedunculated and situated in a bronchus from which its removal can readily be accomplished is best treated bronchoscopically. Patients of advanced years and those whose lesion is situated close to the coryna, so that a pneumonectomy would have to be performed, are also best treated by bronchoscopic means. After bronchoscopic treatment has been employed, it is necessary that the patients be subjected to repeated bronchoscopic examination because of the possibility of recurrence.

Surgical treatment is advisable in all other cases and in cases in which the tumor shows evidence of recurrence.

ABSTRACT OF DISCUSSION

DR. PORTER P. VINSON, Richmond, Va.: Bronchial adenoma is controversial from the standpoint of treatment as well as diagnosis. Dr. Moersch did not mention some of the difficulties involved in the diagnosis of bronchial adenoma, but from a bronchoscopic point of view the two lesions that have been most confusing to me have been (1) the polypoid type of carcinoma that extrudes from the lumen of a bronchus and resembles an adenoma and (2) the erosion of a hilar lymphatic node into the lumen of a bronchus. In a protruding carcinoma the diagnosis is usually easily established by examination of tissue removed at bronchoscopy, but in erosion of a hilar node the diagnosis is more difficult. I have not been as successful as Dr. Moersch in establishing the diagnosis of adenoma by bronchoscopic biopsy, as many of the adenomas that I have observed have shown inflammatory change only on microscopic study of the tissue. The tissue of nodes eroding into the lumen of the bronchus, is also inflammatory, and one is uncertain whether one is dealing with a lymphatic node or an adenoma. Most of the adenomas that I have seen in recent years have been confined entirely to the lumen of the bronchus and have not extended through the bronchial wall, and I have been disturbed when it has been necessary to remove one or more lobes of the lung to eradicate such a growth. Obstruction in the lumen of the bronchus results in infection distal to the tumor, and lobectomy becomes impossible because of adhesions resulting from sec-

ondary inflammatory changes. Total removal of the lung may be required if resection is attempted, and when a small intrabronchial tumor is responsible for the entire process pneumonectomy seems unjustifiably destructive. I believe that moderate infection distal to the tumor is not justification for removing portions of the lung. After the removal of an obstruction, such as a foreign body, the lung has extraordinary reparative power, and in many patients the infection may disappear completely. I would like to ask Dr. Moersch whether he has found any tiny adenomas in the depths of the bronchus that might prove confusing in the diagnosis and treatment of so-called bronchial erosion with bleeding.

DR. ALFRED GOLDMAN, Beverly Hills, Calif.: There is much in this paper in favor of, and I am in favor of, a more active surgical approach to the treatment of bronchial adenoma. Nineteen patients have been operated on for bronchial adenoma, 9 since I left the University of California; in these 19, lobectomy or pneumonectomy was performed with 1 death, the first patient to undergo operation, giving a mortality of 5.8 per cent. The remainder of these patients are living and well, and all of the last 9 are able to work. The importance of what Dr. Vinson mentioned cannot be overlooked, that this is a slow-growing tumor, locally invasive, seldom metastasizing and seldom becoming widespread in its malignant nature. Occasionally it may be wise to perform local excision transpleurally through bronchotomy. Transpleural bronchotomy has been done in 3 instances. One girl aged 17 had a left stem bronchotomy and has recovered, with no evidence in the plain roentgenograms of any residual opacities. She has a good functioning left lung. The second patient, with a tumor in the left stem bronchus, had a left lower lobectomy with extension of the excision to include the tumor in the left stem bronchus, thus saving the upper lobe of the left lung. She has been well for three years and is now working as a telephone operator. In the third case in which this was attempted it was impossible to remove the tumor by local excision because the tumor had surrounded and obstructed the left upper lobe bronchus, so a pneumonectomy was performed.

DR. HERMAN J. MOERSCH, Rochester, Minn.: In answer to Dr. Vinson's question regarding difficulty in the diagnosis of some extremely small adenomas, we, too, have difficulty with such lesions. Often the correct diagnosis depends on the pathologist. Without his help I am sure the problem would be much more difficult. I believe that bronchotomy offers definite possibilities in dealing with small lesions. The word benign, as far as adenoma of the bronchus is concerned, is misleading and should be discarded. The lesion is not benign; it is a malignant tumor. Frequently a patient with adenoma of the bronchus is allowed to go untreated for too long simply because the lesion has been called benign, and it is not realized that adenoma can and does metastasize with serious consequences. Dr. Goldman has emphasized that a patient with adenoma of the bronchus who is treated bronchoscopically must be checked repeatedly, because the lesions do have a tendency toward recurrence. This is exemplified by the 2 cases mentioned in my paper, in which recurrence of the adenoma took place ten years after original removal.

Character of the Physician.—The prime object of the medical profession is to render service to humanity; reward or financial gain is a subordinate consideration. Whoever chooses this profession assumes the obligation to conduct himself in accord with its ideals. A physician should be "an upright man, instructed in the art of healing." He must keep himself pure in character and be diligent and conscientious in caring for the sick. As was said by Hippocrates, "He should also be modest, sober, patient, prompt to do his whole duty without anxiety; pious without going so far as superstition, conducting himself with propriety in his profession and in all the actions of his life."—Section I, Chapter I of the Principles of Medical Ethics of the American Medical Association.

ANEURYSM OF THE INTRACRANIAL CAROTID ARTERY

Syndrome of Frontal Headache with Oculomotor Nerve Paralysis

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It is proposed to critically analyze 31 consecutive cases of aneurysm of the intracranial carotid artery, the chief features of which were oculomotor paralysis or paresis associated with frontal or orbital head pains, and to show that these combined symptoms are sufficient to permit a presumptive diagnosis of aneurysm of the intracranial carotid artery. Of the 31 cases with this clinical diagnosis, based primarily on these two symptoms, all were proved either by arteriography or operative exposure and many of them by both. Surgical therapy and operative results in 26 of the patients will be discussed.

This closely related combination of symptoms has been recognized and discussed by many observers, particularly in relation to underlying pathologic states that might give rise to them. Thus aneurysms of the intracranial carotid, as well as the relationship of anomalous vessel arrangements to the basal cranial nerves, have been thoroughly studied. A close analysis of both the pathologic state of the basal arteries and the normal and abnormal positions of the second, third, fourth, fifth and sixth cranial nerves has led a number of writers to comment on the analogy between the etiologic basis and symptoms of aneurysm of the intracranial carotid artery, ophthalmic migraine and migraine. Perhaps no one has more clearly defined the basic factors in this syndrome than Bramwell (1933),[1] who made the following pertinent statement: "It is here suggested, and evidence is advanced in support of the suggestion, that recurrent and periodic ocular paralysis and ophthalmoplegic migraine are probably always, or almost always, syndromes of vascular origin; that the ocular paralysis is due to pressure upon the nerve either (*a*) by a leaking aneurysm or (*b*) by an aneurysm which is still intact, or an artery which has an abnormal relationship to the nerve; and that, in the latter case, symptoms result when the aneurysm or the artery which lies in contact with the nerve is temporarily distended as a consequence of vasomotor changes such as accompany an attack of migraine." Bramwell also made an important contribution to the topic here under discussion when he described the clinical features of "A Case of Leaking Aneurysm of the Circle of Willis, and Two Cases of Recurrent Oculomotor Paralysis: A Clinical Comparison" (1931).[2]

Sunderland (1948)[3] recently has given an excellent anatomic review of the vascular arrangement at the base of the brain and its relationship to the cranial nerves, which emphasizes the close contact between these structures. From such a study it is easy to understand the reactions in the nerves which are possible from physiologic and pathologic changes in the vessels.

From the Departments of Neurosurgery of Wills (Eye) and Jefferson Hospitals.

Read before the Section on Ophthalmology at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1949.

1. Bramwell, E.: The Etiology of Recurrent Ocular Paralysis (Including Periodic Ocular Paralysis and Ophthalmoplegic Migraine), Edinburgh M. J. **40**: 209, 1933.

2. Bramwell, E.: A Case of Leaking Aneurysm of the Circle of Willis and Two Cases of Recurrent Oculomotor Paralysis: A Clinical Comparison, Edinburgh M. J. **38**: 681, 1931.

3. Sunderland, S.: Neurovascular Relations and Anomalies at the Base of the Brain, J. Neurol. Neurosurg. & Psychiat. **11**: 243, 1948.

Aneurysms of the intracranial portion of the carotid artery have been recognized, diagnosed preoperatively and proved by craniotomy exposure in a few sporadic instances, and a detailed analysis of a group of these lesions may be found in Dandy's [4] classic monograph on this subject, in which he reported 18 "cures" (66 per cent) in a total of 27 aneurysms of the intracranial carotid artery.

Attempts to apply direct obliterative methods to aneurysms of the intracranial carotid artery by a craniotomy approach have been scantily reported in the literature. The first successful attempt apparently was made by Dott,[5] who in 1933 applied a muscle patch to a ruptured 3 mm. aneurysm "at the bifurcation" apparently of the carotid into the anterior and middle cerebral arteries. This patient recovered and might well be recorded as an instance of cure if the muscle patch formed a sufficiently strong scar to prevent further rupture. I can find no follow-up on this case.

The second case, and probably the first in which a definite cure was established by complete obliteration of the aneurysm by clipping of its neck, was reported by Dandy in 1937.[6] His report of this case is classic and clearly covers all the criteria for establishing a priority for curing an intracranial carotid aneurysm by a specific surgical measure.

McKenzie (1938) [7] in a brief line relative to a discussion of German's paper on "Intracranial Aneurysms" stated that he had removed a carotid aneurysm by dividing the carotid artery. The method he used is not recorded. The patient recovered. Fincher (1939) [8] may have cured an aneurysm of the intracranial carotid artery by clipping that artery intracranially and ligating it in the neck. His description of the incident as recorded is so confusing that one can come to no conclusion as to exactly what was found or done. The report states, "Exposure of the carotid artery just beneath the right optic nerve permitted identification of the anterior communicating artery, and two silver clips were placed anterior to this communicating vessel." It is probable that the stenographic recordings were printed in error.

Voss (1941) [9] opened and removed an organized clot from a large carotid aneurysm by craniotomy without doing anything specific to cure the lesion. The patient lived but could not have been cured. A similar case was reported by Klemme and Woolsey (1942).[10] They apparently believed that the aneurysm in their case was from the anterior cerebral artery, but the account given makes it appear likely that it came from the carotid artery. An attempt was made to cure the patient by filling the aneurysm with muscle.

Woodhall and Lowenbach (1943)[11] reported 3 aneurysms of the intracranial carotid artery treated by intracranial ligation with 1 death. Matson and Woodhall (1948) [12] also report a fourth patient with a peduncu-

4. Dandy, W. E.: Intracranial Aneurysms, Ithaca, N. Y., Comstock Publishing Co., Inc., 1944.
5. Dott, N. M.: Intracranial Aneurysms: Cerebral Arterio-Radiography; Surgical Treatment, Edinburgh M. J. 40: 219, 1933.
6. Dandy, W. E.: Intracranial Aneurysm of Intracranial Carotid Artery Cured by Operation, Ann. Surg. 107: 655, 1938.
7. McKenzie: Intracranial Aneurysm: A Surgical Problem, in Proceedings of Cushing Society, Zentralbl. f. Neuro-chir. 2: 352, 1938.
8. Fincher, E. F.: An Aneurysm of the Intracranial Carotid Artery Treated Surgically, Yale J. Biol. & Med. 11: 423, 1938-1939.
9. Voss, O.: Operation Intracranial Aneurysm of the Internal Carotid, Zentralbl. f. Chir. 68: 1330, 1941.
10. Klemme, R., and Woolsey, R. D.: Suprasellar Aneurysm: Case with Recovery, Arch. Neurol. & Psychiat. 47: 662 (April) 1942.
11. Woodhall, B., and Lowenbach, H.: Congenital Cerebral Aneurysms Lateralized by Electroencephalography, South. M. J. 36: 580 (Aug.) 1943.
12. Matson, D. D., and Woodhall, B.: Intracranial and Cervical Trap Ligation of the Carotid Artery Complicated by Blindness of the Homolateral Eye, J. Neurosurg. 5: 367, 1948.

lated aneurysm off the carotid (as shown definitely by arteriogram) in whom, after neck ligation of the internal carotid, exploration by craniotomy was performed. "The aneurysmal sac was seen lying against the floor of the skull lateral to and behind the posterior clinoid, but the point of origin from the vascular tree could not be exposed. The bifurcation of the internal carotid into the anterior and middle cerebral arteries was visualized and a silver clip placed on the carotid artery just proximal to this bifurcation." The patient lived and apparently had no serious complications except for a blindness on the operated side, in spite of the fact that the clip was placed on the carotid beyond the posterior communicating artery.

Greenwood (1944)[13] reported a cure by coagulating the internal carotid artery and aneurysm at the first part of the intradural carotid. Carmody (1946) [14] twice exposed an aneursym at the posterior communicating artery arising from the carotid. He tapped it with a needle the first time and resected the frontal lobe from over it the second time. Nothing specific was done to cure it, and the patient died ten days after the last operation.

Martin 1946)[15] reported 2 patients with intracranial aneurysms who were treated by carotid ligations in the neck and ligations of the aneurysms themselves without any clear description of what was found. Both patients apparently lived. Feld and deSèze (1947) [16] reported clipping the neck of an aneurysm of the first part of the intracranial carotid artery with recovery.

Palma (1947) [17] exposed an aneurysm of the intracranial artery and ligated it. The exact type of procedure is not clear, but it appears likely that the patient was cured. Dickman, Zimman and Zelasco (1947) [18] ligated the carotid artery in the neck and intracranially to trap an aneurysm probably of the cavernous sinus, although there is no account of their actually seeing the lesion.

Undoubtedly others have reported cases of direct surgical attack on intracranial carotid aneurysms, which I may have overlooked on reviewing the literature, and many more patients have been successfully treated by open exposure. Enough sporadic reports are available at present to establish and consolidate general principles for the treatment of intracranial aneurysms. A complete, safe cure of each patient seems to be the goal to be sought at the present time; but it must be remembered that certain patients for various reasons must receive only palliative treatment. The possibilities and wisdom of a direct surgical approach to all intracranial aneurysms for specific curative therapy obviously demands emphasis.

Ocular signs and headache are common and varied in all cases of intracranial aneurysm, but they are particularly constant observations in those lesions affecting that part of the carotid artery which is inside the skull before it branches into the middle and anterior cerebral arteries. Also involved at this part of the

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17. Palma, E. E.: Intracranial Aneurysm of the Internal Carotid Artery in Willis' Polygonal Space: Dandy Operation; Recovery, Bol. Soc. cir. d. Uruguay 18: 571, 1947.
18. Dickman, G. H.; Zimman, L., and Zelasco, A. M.: Intracranial Aneurysm of the Internal Carotid, Chirurgia, 14: 44, 1947.

carotid artery are the two rather constant, short, anterior choroidal and posterior communicating arteries. Within an anatomic radius of about 1 inch (2.54 cm.) around this part of the carotid artery lie the optic, oculomotor, trochlear, abducens and trigeminal nerves; any one, or all, of which may be involved in these lesions at times. The oculomotor nerve, being more closely in contiguity to the carotid artery obviously should be, and is, the most commonly damaged of these nerves by aneurysm arising from it. Hence, the early oculomotor palsy seen with these lesions.

This same anatomic location is abundantly supplied with pain sensation by tiny branches from the ophthalmic division of the fifth cranial nerve. Any pressure or localized irritation in this region causes pain to be projected to the eye socket and forehead and often along the side of the nose and inner canthus, since these are the well known peripheral areas supplied by the upper trigeminal branch. One can readily demonstrate this at operations uncovering this region by simply touching the area with a forcep or probe. An excruciating, lancinating pain is felt in the aforementioned regions. Thus, one has the obvious reason for the common symptoms of paralysis of the third nerve with eye and uni-

Fig. 1.—*A*, turning out of eyeball and enlarged pupil in a typical oculomotor paralysis caused by aneurysm of the intracranial carotid artery; *B*, the upper lid droops so as to completely close the eye.

lateral forehead pain, which are so common in this lesion. Exceptions to these combined symptoms occur. Three patients of the group considered herein had no unilateral frontal pain, and a like number had no oculomotor paralysis.

Many other symptoms may be associated with this lesion when it becomes large or presses in some particular direction, or when actual rupture of the aneurysm takes place. When there is bleeding into the subarachnoid space, all the classic symptoms of spontaneous subarachnoid hemorrhage may occur, with its meningismus, mental confusion (even to profound, long-continued stupor) and generalized, atrocious headache. Sixteen patients had generalized headaches in addition to acute periorbital pain. Five had meningismus, and these commonly showed evidence of blood in the spinal fluid. Six had mental confusion, and 1 was completely comatose for several days. Vomiting occurred in 11 cases, usually as an early symptom. Four patients had frankly bloody spinal fluid. Two patients had contralateral hemiparesis; one from direct pressure of a circumscribed blood clot against a peduncle, the other from a huge hematoma of the frontal lobe.

The duration of symptoms when I first saw these patients extended from five days to five years. It is certain that most aneurysms cause sudden death, and the percentage that reaches the neurosurgeon represents only a small fraction of the persons suffering from intracranial aneurysms of the many cerebral arteries. Only a well trained observer can locate these small lesions even at necropsy, as they are usually missed in the huge clot surrounding the tiny, thin-walled sacculation.

OCULAR SIGNS

Involvement of the oculomotor nerve is almost a constant feature of aneurysms of the intracranial carotid artery and will be absent presumably only in those of tiny size, fusiform in type, or those far out near the carotid fork away from the nerve. Typically, the upper lid is ptosed and covers the pupil so as to obscure vision; the eye turns outward, and the pupil is dilated and does not react to light or convergence or consensually (fig. 1). There are many variations in this picture, depending on the degree of involvement. A slight ptosis of the upper lid, with only an appreciable dilatation of the pupil, is the minimum sign of its dysfunction. Occasionally the pupil on the involved side will be smaller. Extraocular paralysis may occasionally occur prior to frontal pain, but more often it develops only after several days or weeks of periorbital pain. The paralysis may come and go periodically, usually lasting many weeks, then leaving for a period of weeks or months to recur. Sometimes the episodic type of paralysis suggests multiple sclerosis or perhaps myasthenia gravis.

An associated involvement of the fourth and sixth cranial nerves is frequently found. More often the fourth nerve is implicated, because it lies closer to the carotid artery than the sixth. Seldom are either of these nerves involved alone, although blood in the cerebrospinal fluid in leaking aneurysms may frequently cause paralysis of the sixth nerve, even though the aneurysm may be some distance from this nerve. All three extraocular nerves were involved only once in this series.

Papilledema occurred in 3 patients—twice on the side of the lesion and once in the eye opposite to it. This was probably caused by direct irritation of the tissues about the optic nerve from blood clot rather than from intracranial pressure, since intracranial pressure was found elevated in only 1 patient, who had a huge hematoma of the frontal lobe which also surrounded the optic nerve.

Unilateral optic atrophy in some degree, with visual loss, occurred in 5 patients, and 1 was almost completely blind in the involved eye from direct pressure of a fusiform carotid aneurysm. The same patient had papilledema of the opposite eye from a second fusiform aneurysm on that side.

Miscellaneous additional ocular signs were homonymous hemianopsia from a large clot on the optic tract back of the chiasm, exophthalmos (1 case), where the aneurysm extended into the orbit along the ophthalmic artery, and the complaint of spots in front of the eyes (1 case). The cranial nerves, other than the second, third, fourth and sixth, were singularly free from involvement in these cases. Those patients showing symptoms of aneurysm inside the cavernous sinus with definite objective signs of pressure against the trigeminal nerve components, which have been so classically discussed by Jefferson,[19] are not included in this study.

19. Jefferson, G.: On the Sacular Aneurysms of the Internal Carotid Artery in the Cavernous Sinus, Brit. J. Surg. 26:267, 1938.

nor is a group of fistulous aneurysms of this same location, for the reason that the two types should be separately classified clinically from those under discussion here.

AGE, SEX AND PATHOLOGIC STATE

Age ranged from 19 to 70 years, with 1 patient in the second decade, 2 in the third, 6 in the fourth, 4 in the fifth, 6 in the sixth, 10 in the seventh and 2 in the seventieth year. Arteriosclerosis undoubtedly plays a prominent part in the causation of carotid aneurysm, but there is indisputable evidence that many are congenital while others are mycotic. One patient had had recurring attacks of rheumatic fever for many years. Syphilis, although it was present in 2 cases, plays an unimportant part in causing these lesions.

The overwhelming predominance of females in this series is exceedingly interesting, there being only 4 males to 27 females. This suggests that, although the male may predominate in having cardiovascular disease, the female is more likely to have aneurysms of the carotid artery. I have no theory as to the reason for this peculiar fact, and it may be that a comparable group of cases in the future will not bear out the present observations.

The aneurysms were of either the fusiform or pedunculated types. Those with an arterial stem were usually of the "berry" type, from 5 mm. to 3 cm. in diameter, and it was often possible to cure the lesion by placing a metal clip on this entering vessel. Almost invariably there were clots and dense adhesions around the aneurysm on the part farthest from its base of attachment where rupture had taken place. It appears that every patient had had a rupture of the aneurysm to some degree, with bleeding and blood clot formation in the tear and around it, synchronous with the onset of the frontal headache. Staining of the subarachnoid and subdural space with blood pigment was an almost constant observation in the cases in which craniotomy was performed, and subdural hematomas were found in 2 patients. There were 17 right-sided aneurysms, 13 left-sided ones and 1 instance of bilateral fusiform lesions. One aneurysm was in the carotid canal, 20 were on the intradural carotid, 8 were of the posterior communicating artery, 1 at the carotid fork and 1 of the intradural carotid; this last aneurysm also involved the ophthalmic artery.

The large number of aneurysms found on the posterior communicating artery deserves special comment and perhaps criticism. It must be realized, and those with surgical experience will fully appreciate, that wide-open exposure of the area at the time of operation, such as is possible at necropsy, is impossible. Accuracy of observation increases rapidly with experience, and, since the cases in which I have performed operations in this location have been fairly numerous, I believe that these figures are reasonably correct. However, many pedunculated aneurysms come off the carotid artery near the posterior communicating branch, and the pedicle itself may be so elongated as to closely resemble and be mistaken for the posterior communicating artery. This is clearly shown in the drawing of patient A. C. (fig. 2), in whom the pedicle was extremely long and its closure by a clip was no problem. Elongation of the neck of the aneurysm is common in this location. A second error is occasioned by the aneurysm arising immediately alongside the posterior communicating vessel and obscuring it from view. One might be reasonably certain at operation that the aneurysm is on the posterior communicating artery, but necropsy studies have revealed that the aneurysm may come off the carotid artery so close to the carotid as to defy detection of its actual origin except by painstaking study with dissecting lenses. One might readily effect a cure by placing a clip across the aneurysm neck, which could easily include the posterior communicating vessel, provided the carotid itself is not ligated. Ligation of both the posterior communicating and carotid arteries is extremely hazardous, for it is seldom that the anterior communicating artery alone will carry enough blood to adequately nourish the brain supplied by the anterior and middle cerebral arteries.

Since the aneurysms of the posterior communicating artery lie in precisely the same location, have the same pathologic appearance and cause the same symptoms as those coming off the carotid, they were included in this group as carotid aneurysms. Their differentiation is necessary only when one is applying surgical therapy —then the exact origin of the aneursym is extremely important.

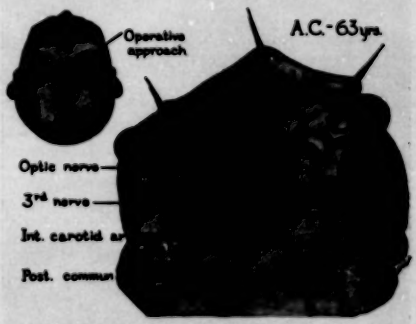

Fig. 2.—This drawing shows the relationship of an aneurysm and its neck to the carotid, posterior communicating artery and oculomotor nerve. Relatively commonly the aneurysm will have become adherent to the tentorium, as shown here.

ROENTGENOGRAPHIC DIAGNOSIS

Plain roentgenography is of little value in the recognition of aneurysms, except those of the carotid canal, which may erode the base of the skull or enlarge the sphenoid fissure. Seldom are they calcified and less frequently do they distort the sella turcica.

The injection of a contrast medium into the internal carotid artery will usually, but not always, show the location and type of this lesion, if done with a precision technic (fig. 3). This information is extremely important when one plans an attack by surgical means, since the successful outcome of the operation frequently depends on the surgeon's intimate knowledge of the size, shape and location of the lesion. Of particular importance is its extradural or intradural location and the relation of its stem vessel to the posterior communicating, middle and anterior cerebral arteries. All but 4 patients in this series had arteriograms, and in these the aneurysms were proved by operation. Occasionally arteriography, for some reason or other, will not demonstrate an aneurysm. This must not deter the surgeon

from operative intervention when the clinical observations clearly indicate an operable lesion. There are 2 such cases in this group.

TREATMENT

All 31 of the cases here reported were studied in detail for the express purpose of treating the patients surgically in order to obtain a permanent cure. This curative approach to the problem of intracranial aneurysm seemed to be the only logical one, since surgical treatment offered the only chance of relief from a sickening headache and, through direct exposure by craniotomy, also offered a specific method for possibly permanent eradication of the lesion. Compromises to this ideal in treatment had to be made for various reasons. One patient was so ill that no type of surgical operation was permissible, and death occurred while

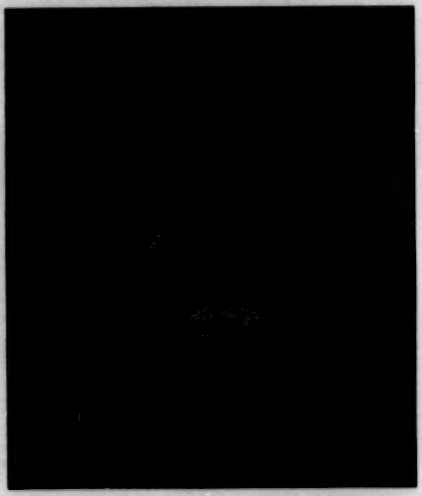

Fig. 3.—Injection of the internal carotid artery with colloidal thorium dioxide shows a pedunculate aneurysm coming off the intracranial carotid artery in supraclinoid location. One can see how such an aneurysm can be cured by clipping its neck.

the patient was still in the hospital; of 4 others who were not treated, 2 refused to undergo operation and 1 was obviously too sick from cardiac disease to permit any kind of surgical therapy and was sent home to be continued on heavy sedation. Six feeble patients were treated by simple ligation of the internal carotid artery in the neck; of these, 2 had to have the ligature removed later because of a hemiparesis due to cerebral ischemia.

Twenty patients were treated by craniotomy and direct attack of the lesion by open exposure. Prior to operative intervention, every patient had a temporary digital occlusion of the internal carotid artery in the neck for several periods of fifteen minutes each to test the patient's probable tolerance to complete ligation of this vessel should it become necessary. At operation three maneuvers were employed: (1) ligation of the neck of the aneurysm (8 cases); (2) ligation of the carotid artery on either side of the aneurysm (8 cases), and (3) covering of the aneurysm with a thin layer of cotton so as to form a new fibrotic covering to reinforce its wall (2 cases). In addition, a palliative operation was performed on 1 patient, in whom direct treatment seemed unwise, to control pain by cutting the sensory root of the fifth nerve. In another patient there was a fusiform dilatation and elongation of the carotid artery which was causing blindness by pressure against the optic nerve. The roof of the optic canal was removed to save vision in the eye, because the other eye was blind as the result of a sclerosis of the retinal vessels.

In view of the terrifically high mortality from rupture of these aneurysms it is imperative that these cases, from the very start, be considered surgical emergencies. Arteriography should be performed immediately, and appropriate surgical therapy should be applied as soon as the patient is a satisfactory surgical risk. Secondary rupture one to three weeks after the initial hemorrhage is common and usually fatal. To avoid this early recurrence and later rupture, operative treatment must be instituted as soon as the lesion is recognized.

RESULTS OF TREATMENT

In all 31 consecutive cases treatment was given in the past six years; in the most recent case treatment was given seven months before the time of writing. In the direct attack (craniotomy) group of 20 patients 5 died, an operative mortality of 25 per cent. One patient died as the result of the clip being placed on the carotid artery beyond the posterior communicating artery. Another died from inadequate cerebral blood flow when the internal carotid artery was clipped. A third patient died because of inadequate blood flow through the opposite carotid artery. At necropsy its lumen was found almost closed with a thrombus. A dislodged embolus from the puncture wound of an iodopyracet injection of the common carotid artery caused a fourth death. In this instance arteriography had been performed five days before a simple intracranial clipping of the aneurysmal pedicle. At the time of the craniotomy the internal carotid in the neck was exposed for the purpose of surrounding it with a controlling tape should difficult hemorrhage occur from the aneurysm. An immediate hemiplegia occurred, and death ensued in three days. This fatality emphasizes the absolute necessity for avoiding any manipulation of a carotid artery which has had its intima injured until a firm cicatrix has formed at the site of the needle puncture. A fifth death was due to a thrombus forming from the injured intima of a sclerosed carotid artery at the point where a clip was closed on it. All of the deaths, with greater experience and skill, could theoretically have been avoided. Not one patient died as the result of operative shock or uncontrollable hemorrhage. No patients have died since their discharge from the hospital.

It is perhaps too soon to speak of cures in this group of cases, because fatalities from these lesions may not occur for many years, but at least one may draw certain definite conclusions from postoperative observations. The unilateral frontal headache was cured in all patients; since this is the symptom with which most of the patients were concerned, its relief was extremely gratifying. Mental symptoms have completely disappeared. The patients have become healthy-appearing, comfortable persons.

Of interest is the recovery of function of the third, fourth and sixth nerves following operation. However, this must be considered definitely of secondary importance to the relief of headache and to the patient's improved general health and comfortable future existence. Occasionally one or more of these nerves have been irreparably ruined by the lesion when, at operation, it was necessary to cut the nerve to cure the aneurysm. Even the optic nerve may have to be sacrificed in certain instances to completely cure an aneurysm or tumor near it. This was not necessary in this group of cases. In recent cases of incomplete, pure third nerve paralysis, regeneration of this nerve after ligating the stem of an aneurysm lying against it has been extremely rapid. In a single week the paralysis may almost completely clear up. Nerves more seriously withered by pressure may gradually improve during a year's time and still recover completely. A third nerve which at operation appears to be shrunken and hopelessly damaged may completely recover its function. In its power of regeneration the third cranial nerve is perhaps the most remarkable of all the cranial nerves. The fourth and sixth nerves have apparently regenerated as readily as the third; it is probable that they are less seriously damaged than the third.

Unfortunately it is not possible in this short article, nor is it the intent, to consider the numerous functional disturbances to the cranial nerves by aneurysms of the internal carotid artery and the reactions and recovery of these nerves following operative treatment. This aspect alone would require a voluminous report to be of any accuracy or value.

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SUMMARY AND CONCLUSIONS

Thirty-one consecutive cases of aneurysm of the intracranial carotid artery with the common symptoms of unilateral, orbital and frontal headache and/or involvement of the third cranial nerve have been analyzed in sufficient detail to point out the general pattern of these two symptoms. Other commonly associated observations, such as generalized headache, meningismus, mental disturbances, involvement of the other cranial nerves, and particularly of the fourth and sixth, are emphasized. The value of radiographic study after injection of a contrast medium in permitting a precise diagnosis and disclosing the shape, size and possibility for a reasonably safe surgical cure of the aneurysm would appear to be considerable from this series.

Five patients died (25 per cent) after a craniotomy approach made in an attempt to specifically treat the aneurysms. This would not appear to be a prohibitive mortality in view of the probable serious outcome of these cases if the patients were untreated and in light of limited past experiences to guide the surgeon in this relatively newly recognized group of surgical lesions.

The following conclusions are to be drawn from this report: first, all persons of adult age with a persistent frontal or orbital pain or ache, associated with a third nerve paresis or paralysis, should be suspected of having an aneurysm of the intracranial carotid artery. With these symptoms, arteriography is indicated in every instance to confirm the diagnosis and to determine the feasibility for direct surgical treatment. Second, most of these patients can be relieved or cured by specific surgical procedures without great or unnecessary risk.

ABSTRACT OF DISCUSSION

DR. FRANK E. WALSH, Baltimore: I find myself in agreement as regards diagnosis and the indications for surgical treatment. What has been said regarding recovery from third nerve paralysis requires amplification. The nerves within the cavernous sinus may be pressed on directly by an aneurysm within the sinus; that is, the aneurysm may be intracavernous. At the posterior portion of the sinus the sixth and first two divisions of the fifth nerve may be directly affected. In the middle of the sinus and at its anterior parts the third, fourth, first division of the fifth and the sixth nerves are available for involvement; at these levels an aneurysm may produce the syndrome of the cavernous sinus (paralysis of the third, fourth, sixth, first division of the fifth nerve and proptosis). Also the third nerve is likely to be pressed on from within and from without the sinus. The onset of third nerve paralysis resulting from aneurysm is extremely variable. In my experience recovery from third nerve paralysis has been relatively slow. In many instances recovery has been associated with the phenomenon of misdirection, which is described subsequently. It seems unlikely that third nerve paralysis is adequately explained on the basis of pressure on the nerve as a single factor. This statement is based on the observation of such paralyses definitely produced by pressure in cases of extradural and subdural hemorrhage. In such cases the paralysis is almost invariably incomplete and the evidences of paralysis disappear rapidly when the pressure is relieved. Demonstrable loss of sensation is the exception and not the rule in these cases. In all probability the pain is referred pain from irritation of branches of the ophthalmic division in the wall of the cavernous sinus. I have observed an analogous situation in the instance of pituitary tumors into which there has been bleeding. After third nerve paralysis regeneration is characterized by misdirection of fibers. Fibers which originally were destined for the superior rectus muscle reach the levator, others which should go to the medial rectus reach the inferior rectus, those for the superior rectus attain the inferior oblique and so on. As a result of this misdirection characteristic abnormalities of ocular movements are observed.

DR. JAMES W. SMITH, New York: I should like to mention pupillography as a possible aid in the diagnosis of aneurysm. About seven years ago the late Dr. Mark Schoenberg and Dr. Otto Lowenstein utilized pupillographic tracings to uncover bilateral glaucoma in patients with normal visual acuity and normal fields of vision in the fellow eye. After the publication of Walsh and King's paper on the ocular signs in intracranial saccular aneurysms, I treated a woman aged 34 with the "berry" type of aneurysm of the left internal carotid artery. After operation by Dr. Dandy she recovered use of the internal rectus muscle and elevation of the upper lid, but the pseudo-Graefe phenomenon and pseudo-unilateral Argyll Robertson pupil have persisted for six years. Pupillographic studies revealed that the left pupil did not react to light and that the direct and consensual reflexes of the right pupil were not normal. The primary contraction phase, as well as the secondary and tertiary phases, were pathologically modified, indicating both a sympathetic and parasympathetic condition on the right side. The psychosensory dilation was intact on both sides; hence, the peripheral sympathetic pathways were considered to be intact. The occurrence of tonohaptic reactions on the right side led to the assumption that in addition to disease of the oculomotor nerve a central sympathetic condition was present. The poor psychosensory restitution phenomenon on the right side furnished further evidence of a central sympathetic involvement. Dr. Loewenstein believed that the abnormal third nerve observations could be explained only by another aneurysm on the surgically untreated side. This was the first instance on record in which pupillography was used to detect the presence of an aneurysm. I should like to ask Dr. Jaeger whether pupillography was utilized as an early diagnostic aid in his large series of cases. No reference to this method appears in Dr. Walsh's textbook. Does he believe that central sympathetic factors may sometimes play a role in the genesis of intracranial aneurysms? This possibility occurred to me because it is known that a rather high percentage of patients have multiple aneurysms.

DR. J. RUDOLPH JAEGER, Philadelphia: It is of interest to note the anatomic misdirection of fiber that sometimes occurs in other neural regenerations, particularly in the facial nerve. The facial muscles will not always react as they should when a facial nerve regenerates. The amazing thing is that the third nerve will regenerate to the point where, for all practical purposes, it functions normally. To see one of these nerves at the time of surgical intervention, one would say that the nerve could never regenerate because only the tiniest thread held the two ends together. Many times the portion of the nerve trunk that is left is only about one tenth of the normal diameter of the third nerve. Dr. Smith inquired about the careful observation and recording of everything that happens in regard to the movement of the eyeballs and particularly of the pupils. My material has been voluminous, and my associates and I are now gaining enough experience on which to plan our observations. A great deal of this material was seen by various ophthalmologists and many neurologists, and we have not really worked out an accurate routine of examination. I do not believe that sympathetic factors have anything to do with causing multiple aneurysms. It is fairly well established that most of these are due to a congenital malformation, and I cannot conceive of sympathetic inhibition having anything to do with their formation. The ophthalmologist is most frequently the first to examine patients with intracranial aneurysms; therefore he must be informed as to the appropriate forms of treatment.

TREATMENT OF HIATUS HERNIA IN OLDER PERSONS

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HENRY A. RAFSKY, M.D.
and
FRANCIS H. GHISELIN, M.D.
New York

Clinical experience has shown that esophageal hiatus hernia in older persons often presents diagnostic and therapeutic problems. The reasons for this are that the hiatus hernia may exist without symptoms; it may produce a syndrome which simulates other diseases, as for example, cholelithiasis or cardiovascular disease; it may be associated with other diseases and produce complications, the symptoms of which dominate the clinical picture, and, finally, the treatment of hiatus hernia, whether medical or surgical, is not infrequently followed by a recurrence of the symptoms. In this article we wish to stress two aspects of this subject, namely, varied clinical manifestations of associated diseases of hiatus hernia which were encountered in a group of patients and the surgical treatment by phrenic interruption.

CLINICAL STUDY

This study is based on a series of 29 patients whose age range was from 50 to 86 years. Seven were men; 22 were women. In each case the presence of an esophageal hiatus hernia was demonstrated roentgenographically. The clinical syndrome which these patients presented when first seen may be grouped as follows: acute gastrointestinal obstruction; early gastrointestinal obstruction; acute constriction of the stomach with gastric hemorrhage; chronic anemia of three to six years' duration; hematemesis; typical history of ulcer, and variable symptoms from pain in the chest and epigastrium which simulate angina pectoris to gastric distress, distention after meals, hiccup and dysphagia.

The diagnostic procedures were as follows: Unless the patients were acutely ill a thorough investigation of the gastrointestinal tract was made. Studies of the biliary tract, the cardiovascular status, hepatic and renal function, gastric analysis, complete blood cell count and urinalyses were performed when indicated. The Max Einhorn string test [1] was used in an attempt to detect an ulcer or erosion of the esophagus or stomach, especially when such lesions could not be demonstrated roentgenographically.

TABLE 1.—*Symptoms* Associated with Hiatus Hernia*

Epigastric and chest pain	24
Gastric distress	20
Vomiting	14
Vomiting and hematemesis	5
Melena	14
Dysphagia	5

* Patients often had more than one of the foregoing symptoms.

The chief symptoms and associated diseases which the patients presented when first seen are listed in tables 1 and 2.

The amount of stomach herniation estimated by preoperative roentgen examination is shown in table 3.

Roentgen examination before operation revealed that there was herniation of the stomach alone in 27 cases, and of the stomach with the transverse colon in 2 cases.

In general plan the patient was treated medically unless surgical intervention was urgently indicated. Surgical treatment was employed only after medical measures had failed to give sufficient relief. Patients with evidence of an ulcer were treated with duodenal alimentation or a modified Sippy diet. Antacid and antispasmodic medicaments were given when indicated. Belladonna was cautiously used in this age group. In patients with gastric obstruction, intubation and decompression were employed. The medical plan of treatment was followed until the patient's symptoms and the acute episode had subsided.

The surgical approach which we found to be most satisfactory, and which entailed the minimum amount of risk in these older, debilitated patients, was interruption of the left phrenic nerve. This consisted of phrenic crushing, partial excision or exeresis. Our preference was simple phrenic crushing for the first procedure, because one thorough crushing frequently gave a permanent paralysis of the left hemidiaphragm

TABLE 2.—*Associated Diseases*

Ulcer		9
Ulcer, perforated		1
Anemia, chronic		15
Cardiovascular disease		10
Acute obstruction	stomach	1
	stomach and colon	2
		3
Early obstruction (stomach)		2

or permanent partial paralysis with relief of symptoms. It is a milder procedure and not accompanied or followed by shock. The only complication encountered, and this was infrequent, was a moderate atelectasis of the base of the left lung, which cleared up spontaneously. Because of the age of the patients and because of associated diseases such as hypertension, cardiovascular and renal impairment, a milder form of phrenic interruption should be the method of choice. Exeresis can and has caused shock, hemorrhage, mediastinal infection, hematoma and pneumothorax, resulting from trauma to blood ves-

From Lenox Hill Hospital, New York.
Read before the Section on Gastro-Enterology and Proctology at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1949.

1. Einhorn, M.: A New Method of Recognizing Ulcers of the Upper Digestive Tract, in Diseases of the Stomach, New York, William Wood & Company, 1929.

sels, pleura and lymph nodes.[2] When the symptoms recurred after the initial phrenic crushing, our procedure was preferably a second crushing or partial excision. On only 2 occasions was an exeresis performed.

The operative procedure, which followed closely that described by Alexander [2] and credited to Goetze, was performed with the patient under local anesthesia. We, as others, lay stress on finding and cutting the accessory phrenic nerves, and particularly the nerve to the subclavius muscle, as it contains an accessory nerve. The position of the phrenic nerve is variable and often has to be searched for, more medially or laterally. In these cases an adjacent nerve, namely the vagus, or long thoracic nerve, or the cervical sympathetic, may be mistaken for the phrenic. If the cervical sympathetic nerve is injured a Horner's syndrome ensues.

Forty-eight to seventy-two hours postoperatively a fluoroscopic check is made to estimate the amount of paralysis of the left hemidiaphragm. During this procedure the "sniffing" maneuver is of great value in showing the paradoxic motion of the diaphragm.

RESULTS

Twenty-nine patients who had a total of thirty-five phrenic operations were observed. The original procedures were phrenic crushing in 24, partial excision in 3 and exeresis in 2. Of the 24 in whom a phrenic crushing was done originally, a second phrenic procedure was required in 6. In the latter a second crushing was done in 2, partial excision in 3 and exeresis in 1. Four of these 6 patients continued to improve; 1 is still free of symptoms after eleven years, but 2 succumbed to acute conditions. In an additional case, in which a second operation by another surgeon was necesary, the abdominal approach was used in an attempt to repair the esophageal hiatus. This patient succumbed as a result of cardiovascular collapse. Of the 24 patients in whom an original phrenic crushing was done, 1 remained well for as long as nine years.

TABLE 3.—*Amount of Stomach Herniation* Estimated by Roentgen Examination Preoperatively*

Small	11 (including short esophagi in 3)
10 cm.	3
¼ of stomach	2 (including 1 short esophagus)
⅓ of stomach	6
½ of stomach	2
⅔ of stomach	3
Complete stomach	1

* Amounts less than 10 cm. in diameter were regarded as small.

In table 4 are listed the results of the initial operation.

The time which elapsed between the first and second operations in 6 patients who required additional surgical treatment, and the results of follow-up, are shown in table 5.

There were 4 cases in which a congenital short esophagus with partial intrathoracic stomach were present. Three of these did especially well postoperatively after a single phrenic crushing. However, one patient required a second crushing, and he has now been well for eleven years. Two of the 29 patients had a history of trauma, and one was not relieved of symptoms by phrenic crushing.

2. Alexander, J.: The Collapse Therapy of Pulmonary Tuberculosis, Springfield, Ill., Charles C Thomas, Publisher, 1937.
3. Deleted in proof.

REPORT OF CASES

The following case reports show some of the varied clinical manifestations observed.

Mrs. K. M., aged 86, was admitted to Lenox Hill Hospital Jan. 18, 1947 with a two week history of vomiting and constipation. When first seen she was acutely ill, vomiting thick orange material and presenting a typical picture of intestinal obstruction plus cardiac decompensation. Examination of the chest disclosed the unusual observations of flatness associated with some breath sounds on the left side with fremitus. Roentgen examination revealed gas bubbles apparently in the stomach and intestine above the diaphragm on the left. Attempts to fill the colon by a barium clysma were unsuccessful. A diagnosis of incarcerated obstructed massive hiatus hernia containing part or all of the stomach and a loop of colon was made (fig. 1). Continuous gastric suction was begun and forced rapid digitalization instituted. Five hours after admission a left phrenic crushing was performed with the patient under procaine anesthesia. There was immediate relief from her vomiting, and forty-eight hours postoperatively bowel movements began. Convalescence progressed satisfactorily, and she was discharged on Feb. 2, 1947. She lived the normal life of a woman 86 years of age until she died of an acute cardiovascular episode July 5, 1948. During this period of one and a half years following phrenic crushing she had absolutely no gastric distress, pain or other symptoms referable to the hiatus hernia.

TABLE 4.—*Results of the Original Operation*

Unimproved		1
Improved but with residual symptoms		15
Improvement lasting 5 to 8 yr.		8
Requiring additional operation		6
Decided improvement		
6 mo. to 2 yr.	5	
2 to 4 yr.	6	13
5 yr.	1	
9 yr.	1	

Mrs. I. G. aged 52, was admitted to Lenox Hill Hospital in February 1946 with a history of persistent and progressive anemia for six years. Lately her condition had become much worse, as shown by extreme fatigue, dizziness and palpitation. She had been treated elsewhere with liver injections, transfusions and iron medicaments. There was no history of severe gastric distress. On admission examination of her blood showed 52 per cent hemoglobin (7.8 Gm.); 2,700,000 red blood cells, and 6,800 white blood cells with 78 per cent polymorphonuclear cells (6 immature cells), 20 per cent lymphocytes and 2 per cent eosinophils. The red cells showed 1 normoblast, hypochromia and polychromia. Examination revealed blood in the stool. The problem was to determine whether the anemia was primary or secondary to a lesion of the gastrointestinal tract or to some other defect. Roentgen examination showed a hiatus hernia, incarcerated, of the entire fundus of the stomach. A fluid level was present. An ulcer crater was demonstrated on the lesser curvature at the level of the diaphragm (fig. 2). The patient was treated with duodenal alimentation for twelve days, and on March 19, 1946 a phrenic crushing was performed. Within a week after the operation the cell count showed 94 per cent hemoglobin (14.0 Gm.) with 4,900,000 red blood cells; one stool examination showed a trace of blood and another

TABLE 5.—*Results of Second Phrenic Operation*

	Time between 1st and 2nd Operations	Follow-Up	
2 cases	11 mo.	1 symptomless	11 yr.
		1 decidedly improved	4 mo.
1 case	12 mo.	improved	6 yr.
2 cases	12 mo.	1 died—see autopsy, case of Mrs. J. H.	
		symptomless	8 mo.
1 case	19 mo.		
1 case	48 mo.	died—uremia	

was negative. The patient has continued to do well, her anemia has not returned and she has had no gastric symptoms to date, three years and three months since phrenic crushing.

Two patients who responded well to the initial phrenic crushing, one for four years and the other for one year, were readmitted to the hospital with symptoms of acute obstruction of the stomach and gastric bleeding.

Fig. 1.—Mrs. K. M. Roentgenograms Jan. 18, 1947: *A*, scout film showing herniation of colon through esophageal hiatus; *B*, after ingestion of barium sulfate, showing stomach also in hernia sac.

Mr. N. S. aged 66, had attacks of severe abdominal pain and vomiting for a number of years. When first seen his gastric aspirate showed a large amount of dark bloody material. He was admitted to Lenox Hill Hospital in February 1945. A roentgenogram of the abdomen showed a gallstone about 2 cm. and renal calculi. The patient also had a hypertrophied prostate and a history of periodic attacks of fibrillation and asthma. Examination of the alimentary tract showed that barium sulfate passed through the esophageal hiatus into the stomach. The distal two thirds of the stomach and probably also the first portion of the duodenum were herniated through the esophageal hiatus. Barium passed upward and to the right half of the supradiaphragmatic portion of the stomach, which lay in the lower half at the left half of the thorax. The diaphragmatic opening appeared to be about 6 cm. in diameter. At six hours there was a 50 per cent gastric retention and at

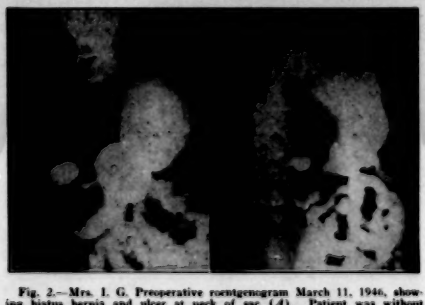

Fig. 2.—Mrs. I. G. Preoperative roentgenogram March 11, 1946, showing hiatus hernia and ulcer at neck of sac (*A*). Patient was without gastric symptoms and was treated six years for chronic anemia. April 29, six weeks postoperatively (*B*): ulcer healed, hernia smaller.

twenty-four hours 25 per cent. The observations indicated a large diaphragmatic hernia containing the distal two thirds of the stomach, which had apparently undergone 180 degrees of rotation as well as complete inversion with a fairly high degree of obstruction at the diaphragmatic esophageal hiatus (fig. 3). The patient was treated with intubation and became symptom free. He was readmitted to the hospital in June 1945, complaining of pain in the stomach and vomiting. A phrenic crushing was performed June 21, 1945, from which the patient made an uneventful recovery; he was discharged July 5, 1945. He remained in comparatively good health for two and a half years, when he had an attack of coronary thrombosis from which he recovered. In April 1949 he was seized with severe pain in the right side of the chest, extending to the back. He vomited and was unable to retain solid food. He had abdominal distress even on a liquid diet. On readmission to the hospital the gastric aspirate contained about a quart (1,000 cc.) of retained fluid. He was treated with intubation, decompression and parenterally given fluids until May 1, 1949, when partial excision of the left phrenic nerve was performed. He progressed well until forty-eight hours later, when he was seized with a severe pain in the right side of the chest and abdomen, marked dyspnea, profuse perspiration and a rapid, thready pulse. He had an acute coronary occlusion, which was evident in the electrocardiogram forty-eight hours later. A duodenal tube, which had been inserted twice, was found coiled on itself in the esophagus because of an acute obstruction at the hiatus. The patient vomited more or less continuously. It was therefore decided to perform a gastroenterostomy to relieve the gastric obstruction. This was done with the patient under local anesthesia and mild thiopental sodium (pentothal sodium®) given intravenously. The patient did well for three days, when he began to go downhill; uremia developed, and he died.

Mrs. J. H. aged 77, was admitted to Lenox Hill Hospital in May 1948, complaining of periodic pain in the epigastrium

Fig. 3.—Mr. N. S., Preoperative roentgenogram (*A*) Feb. 26, 1945, after ingestion of barium sulfate meal, showing inversion of stomach and herniation of its midportion and distal portion through the esophageal hiatus. Roentgenogram June 26, 1945, five days postoperatively (*B*), showing a Max Einhorn tube in the stomach and elevation of the left hemidiaphragm and again demonstrating the complexity of the hernia.

for a number of years. The pain at times resembled that of biliary colic, was referred to the back and would be relieved by induced vomiting. Physical examination revealed essentially normal conditions except for hypertension and flatness in the left side of the chest posteriorly. Cholecystography showed a normal gallbladder shadow. Roentgen examination of the alimentary tract showed a large diaphragmatic hernia of the hiatus type. This contained the entire stomach, which was inverted. A loop of the midtransverse colon was lying in the hernia (fig. 4). A phrenic crushing was done, and the patient made an uneventful recovery (fig. 5). She remained well for a year and then was readmitted to the hospital because of an acute attack of epigastric and abdominal pain and hematemesis. A flat roentgenogram of the lower part of the thorax and abdomen showed a hiatus hernia that contained the distal portion of the stomach, which was decidedly dilated. The fundus portion which lay below the diaphragm was dilated and measured approximately 20 cm. in diameter. The observations suggested obstruction of the distal part of the stomach. The patient was intubated and about 2 quarts (2,000 cc.) of coffee ground material, at times tinged with bright red blood, were obtained. The patient felt better, but as soon as the suction was turned off

she again had severe abdominal pain, so that she had to be decompressed more or less continuously. Transfusions and fluids by the parenteral route were administered. After a week an attempt was made to give liquids by mouth. This was successful for three days, then use of the suction apparatus again became necessary. In the meantime acute glaucoma developed, for which the patient required an emergency operation. Penicillin and dihydrostreptomycin were administered. Because of

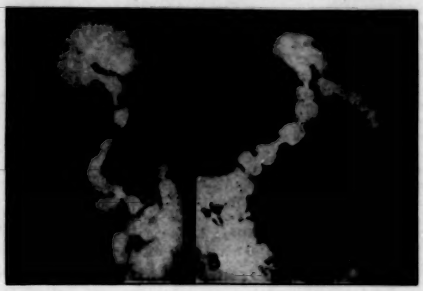

Fig. 4.—Mrs. J. H. Preoperative roentgenograms May 17, 1948, showing (*A*) inversion and herniation of entire stomach through esophageal hiatus and (*B*) portion of the transverse colon also entering the sac.

the continuation of the obstruction, a partial excision of the left phrenic nerve was performed. The patient felt better for twenty-four hours; then she was suddenly seized with an acute attack of pulmonary edema and a generalized convulsion and died. The following autopsy observations were made: The left side of the diaphragm was elevated: there was slight gastric dilatation; the whole stomach was below the diaphragm. In this organ decided hypertrophic gastritis was present in the proximal two thirds of the body. In the posterior portion of this area a perforation was observed, which the pathologist stated was fresh and antemortem but which clinically did not present any evidence. This perforation communicated with a part of the omental bursa which was walled off by the posterior wall of the stomach, the body and tail of the pancreas and a portion of the greater omentum. In the remaining third of the stomach hemorrhagic gastritis was seen. This was the part which had been incarcerated and constricted prior to the phrenic interruption. An advanced degree of arteriosclerosis of the aorta and cerebral vessels was also present.

COMMENT

A group of older patients with various clinical manifestations and who had diseases associated with hiatus hernia was observed. Although a number of authors [4] have reported the fact that bleeding is found in patients with hiatus hernia, 13 patients in our group had chronic anemia for a comparatively long time before the basic underlying cause—hiatus hernia—was detected. In 2 patients the anemia was so severe that they had been treated for pernicious anemia elsewhere. For example, Mrs. M. S., aged 52, was admitted to Lenox Hill Hospital in September 1944. She stated that in January 1941 she noted weakness, dizziness and dyspnea. She was advised that she had pernicious anemia and was treated with liver extract and blood transfusions. She was eventually examined roentgenologically, and about two thirds of the stomach was found in the hiatus hernia. She was again treated for anemia and felt better periodically. Because of a continuance of symptoms she was admitted to Lenox Hill Hospital in September 1944 and was operated on in another division. An attempt was made to repair the esophageal hiatus by the abdominal approach. After a stormy convalescence the patient left the hospital in November 1944. She did well until May 1945, when her symptoms returned. She was again admitted to the hospital, and this time a phrenic crushing was performed. When she had a recurrence of her anemia a second crushing was performed in June 1946. The last examination of her blood, in January 1949, showed no anemia.

The bleeding in hiatus hernia may be due to several factors. A gastric ulcer may be present, or there may be an erosion in the thoracic pouch. The occurrence of ulceration within the herniated portion of the stomach, at the neck of the hernia or just below the constriction, is a commonly reported observation. Bleeding may also be due to an esophagitis, or to a congestion resulting from severe constriction of the pouch. The chronic anemia due to the bleeding in hiatus hernia may exist without any gastric symptoms.

Another complication in hiatus hernia which has not been sufficiently stressed in the literature, and which was observed in 4 of our cases, was that the stomach itself had become strangulated. These observations are contrary to the sometimes expressed opinion that the stomach is too thick-walled and powerful to become obstructed and strangulated in a hiatus hernia.[5]

Fig. 5.—Mrs. J. H. Roentgenogram July 28, 1948, two months postoperatively, showing half of the stomach now below the diaphragm.

In 2 of our cases a loop of transverse colon was present in the thorax in addition to the stomach. In the woman aged 86, who had congestive heart failure

4. (*a*) Adams, R., and Lee, W. F., Jr.: Diaphragmatic Hernia, S. Clin. North America **26**: 742, 1946. (*b*) Harrington, S. W.: Diaphragmatic Hernia Associated with Traumatic Gastric Erosion and Ulcer, Surg., Gynec. & Obst. **51**: 504, 1930. (*c*) Mendelsohn, E. A.: Hiatus Hernia of Stomach as Source of Bleeding, Radiology **46**: 502, 1946. (*d*) Morvin, S.: Diagnosis and Medical Management of Diaphragmatic Hernia, Rhode Island M. J. **20**: 5, 1937. (*e*) Truesdale, P. E.: Gastric Ulcer Associated with Diaphragmatic Hernia, New England J. Med. **207**: 385, 1932. (*f*) Bockus, H.: Gastroenterology, Philadelphia, W. B. Saunders & Company, 1943.

5. Frank, L. W., and Hamilton, J. E.: Diaphragmatic Hernia, J. Thoracic Surg. **11**: 219, 1941.

and acute gastrointestinal obstruction, recognition of the obstruction as being due to a hiatus hernia and immediate performance of a phrenic crushing operation are credited with saving the patient's life. Because of her age and the numerous complications present, the abdominal or thoracic approach was against better surgical judgment, whereas the phrenic interruption was performed quickly and with little risk.

Our reasons for employing phrenic interruption in elderly persons are as follows: Sauerbruch [6] and Jamin,[7] many years ago, advocated phrenic crushing in cases of diaphragmatic hernia in infancy, and in old age where definite evidence of incarceration, strangulation and obstruction were present and where the general condition of the patient precluded a formal repair operation. This was regarded purely as a temporary measure. Later Harrington,[8] and then Lahey [9] and Overholt [10] went a step further and reported cases in which phrenic crushing was used in incarcerated diaphragmatic hernias with moderate obstructive symptoms. Cave [11] also has had good results in various types of diaphragmatic hernias using either exeresis or crushing.

In 1936, during an operation for diaphragmatic hernia using the thoracic approach, one of us (O. C. P.) noted a pronounced constriction around the neck of the hernia so that a finger could not be inserted between the hernial protrusion and the esophageal opening. This was due not solely to adhesions but also to the fact that the diaphragmatic muscular esophageal opening was in a state of spasm. After the left phrenic nerve was crushed the following observations were noted: (1) the usual paralysis of the left half of the diaphragm with an upward ballooning of the relaxed muscle; (2) definite relaxation of the esophageal opening with immediate loss of spasm, and (3) partial slipping down of the herniated portion of the stomach through the esophageal opening with a consequent decrease in the size of the hernia but not to the point of complete reduction.

Consolidating these reports and our own observations we deemed it advisable to advocate left phrenic nerve interruption in hiatus hernia in older persons with or without incarceration or obstruction, when symptoms of pain, bleeding, pressure or ulceration are present. In our experience this operation has been a safe procedure and has given satisfactory relief in these elderly patients.

SUMMARY

1. A series of twenty-nine patients in the older age group with esophageal hiatus hernia was observed.

2. Varied clinical manifestations resulting from associated diseases with hiatus hernia which were encountered are described.

3. The treatment of hiatus hernia in older persons, with special reference to interruption of the phrenic nerve, is outlined.

66 East Seventy-Ninth Street.

6. Sauerbruch, F.: Chirurgie der Brustorgane, Berlin, Julius Springer, 1925, vol. 2, p. 693.

7. Jamin, F.: Ueber den Einfluss der Phrenikus reizung Beim Menschen Nach Roentgenuntersuchungen, Festschrift fur j. Rosenthal Theime, Leipzig, 1906.

8. (a) Harrington, S. W.: The Use of Phrenic Neurectomy in the Surgical Treatment of Diaphragmatic Hernia, Proc. Staff Meet., Mayo Clin. 2: 306-308, 1927; (b) Phrenicotomy in the Treatment of Diaphragmatic Hernia, Arch. Surg. 18: (pt. 2) 561 (Jan.) 1929; (c) Surgical Treatment of the More Common Types of Diaphragmatic Hernia, Ann. Surg. 122: 546, 1945.

9. Lahey, F., cited by Overholt.[10]

10. Overholt, R. H.: Diaphragmatic Hernia: Management by Phrenic Nerve Interruption, S. Clin. North America 23: 651, 1933.

11. Cave, H.: Personal communication to the authors.

ABSTRACT OF DISCUSSION

Dr. Irving B. Brick, Washington, D. C.: Dr. Pickhardt has presented a rather complicated series of patients. The ordinary types of hiatus hernia are not usually referred to surgery. I should like to ask Dr. Pickhardt how many of the hiatus hernias seen during the same period did not require surgical treatment. I ask that, because of some statistical data associates and I have collected. In a series of 3,448 patients in which routine upper gastrointestinal roentgenograms were made, hiatus hernias were noted in 308 cases, an incidence of 8.93 per cent. The lesions did not predominate in females as much as was commonly thought previously. Many other series confirm the fact that males have this disease in great numbers. The group between 50 and 80 years comprised 76.61 per cent of the patients with hiatus hernia. Of the hiatus hernias, 223 were considered small, 68 moderate and 17, with over one third of the stomach in the thorax, large. Dr. Pickhardt's series of 29 surgically treated patients shows a greater preponderance of strangulation than usually seen. This may give rise to the obstructive symptoms he mentioned. That was not the usual situation observed clinically in our experience. Of the associated lesions diagnosed in this series of 308 hiatus hernias, 31 were duodenal ulcers. There was a total of 79 associated gastrointestinal lesions. In 1 of 3 cases of hiatus hernias in this series there was an associated gastrointestinal lesion. One must be sure before considering surgical intervention that there is not another associated lesion possibly causing the symptoms. We have treated most of our patients medically with the ordinary ulcer regimen with antispasmodic and antiacid therapy, and reassurance that cancer is not present. We have found that this type of therapy is effective in most cases, particularly in the predominating small hiatus hernia. Many patients complain of pain only at night when they are lying down. That has been observed many times previously, and we have found that the use of a hospital-type bed, where the patient can sleep in a semireclining position, is helpful in some of these cases. We have not had recourse to surgery in as many instances, apparently, as those reporting other series of cases.

Dr. Herbert C. Maier, New York: Most patients with hiatus hernia do not require any surgical therapy; many are asymptomatic. The rationale of treatment of hiatus hernia by paralysis of the left leaf of the diaphragm is clarified by a consideration of several points. The frequency and severity of symptoms caused by a hiatus hernia may have little relationship to the size of the hernial sac. Small hernias may cause severe symptoms and large hernias are sometimes asymptomatic for many years, especially in young adults. The factor of greatest importance in symptomatology except in some large hernias is the constrictive effect of the edges of the diaphragmatic hiatus. These effects may be direct, as when an ulcer develops in the stomach at the site of constriction, or reflex, as seen with the secondary cardiac arrhythmias. Therefore the results of hemidiaphragmatic paralysis in the treatment of hiatus hernia are not to be judged by the postoperative roentgen observations but by the effect of operation on symptoms. An excellent clinical result may be obtained without significant change in the degree of herniation present. My experience with phrenic interruption in the treatment of hiatus hernia in elderly patients has been gratifying. Of 2 patients 80 years of age, an excellent result was obtained in 1 and improvement occurred in the other patient. One patient was unable to retain any food by mouth and was losing ground on parenteral alimentation. She has had no difficulty since operation two years ago. The other octogenarian had severe pain and decided cardiac arrhythmias; she was improved after phrenic interruption. The chief indications for diaphragmatic paralysis in preference to transthoracic repair of the hernia are (1) advanced age of the patient, (2) poor general condition, (3) severe cardiac or respiratory disease, (4) symptoms so slight that a major surgical operation does not seem indicated, (5) symptoms which are not definitely known to be caused by the hiatus hernia, (6) possible control of hemorrhage due to secondary ulceration of stomach or esophagus and (7) relief of acute obstruction without strangulation. In the last three groups transthoracic repair may be advisable at some later date. Pronounced anemia may be present without any history of hematemesis or tarry stools.

One such patient who had epigastric distress and fainting was considered to have cardiac disease. Examination revealed a profound anemia (hemoglobin of 42 per cent). A transthoracic repair was performed in that case. The medical and surgical treatment of hiatus hernia must be individualized for the best results.

DR. HENRY A. RAFSKY, New York: For purposes of treatment patients with hiatus hernia should be divided into three classes: 1. Those without symptoms, in whom the hernia is discovered accidentally; these require no treatment. 2. Those with a minimum of symptoms. They can be treated medically, as my associates and I have done. 3. Those with hernia associated with complicated diseases. Unfortunately, medical treatment cannot suffice in these instances, and some form of surgery must be used. Most of our patients had chronic anemia, either macrocytic or microcytic. One patient had been ill for six years before the cause of the anemia—the hiatus hernia—was detected. Two patients had been treated for pernicious anemia before the underlying cause—the hiatus hernia—was found. This fact should be emphasized, namely, in chronic anemia of undetected or undetermined origin, a gastrointestinal survey should be included in the examination of the patient. These cases of anemia may occur without gastric symptoms. Numerous causes have been described to explain the anemia, such as ulcer, erosions or congestion of the pouch. Gastritis should also be emphasized in this connection. In one of our cases hemorrhagic gastritis was present in the distal third of the stomach and hypertrophic gastritis in the other two thirds of the stomach. In the latter two thirds a perforation was found, which the pathologist said had occurred ante mortem, but the patient did not have any symptoms referable to it. I saw a gastric perforation in another instance of hiatus hernia.

DR. OTTO C. PICKHARDT, New York: Dr. Brick asked how many patients did not require operation. My only answer is "a great many." About 5 or 10 per cent, I believe, of patients undergoing a routine gastrointestinal series show a small hiatus hernia; and I can say again that we operated only on those having definite symptoms due to their hernia.

CLINICAL USE OF THE ANTIBIOTIC CHLORAMPHENICOL (CHLOROMYCETIN®)

JOSEPH E. SMADEL, M.D.
Washington, D. C.

It is two years since the first reports appeared dealing with the new antibiotic choloramphenicol (chloromycetin®). These first papers[1] described laboratory experiments in which the antibiotic was shown to inhibit the growth in vitro of a wide range of bacteria and, of greater interest at that time, to have a chemotherapeutic effect in a number of experimental rickettsial and virus infections. In addition, chloramphenicol was found to have two other characteristics which promised to make it useful in the treatment of patients. These were (1) its low toxicity for animals and (2) its capacity to elicit as satisfactory results when given by the oral route as by the parenteral route. It was quickly shown that the new drug was essentially nontoxic for normal men and that relatively simple technics revealed the presence of appreciable levels of active drug in the blood and urine of such persons following oral administration of the antibiotic.[2]

From the Department of Virus and Rickettsial Diseases, Army Medical Department Research and Graduate School, Army Medical Center.

Read before the Section on Experimental Medicine and Therapeutics at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1949.

1. Ehrlich, J.; Bartz, Q. R.; Smith, R. M.; Joslyn, D. A., and Burkholder, P. R.: Chloromycetin, a New Antibiotic from a Soil Actinomycete, Science 106:417, 1947. Smadel, J. E., and Jackson, E. B.: Chloromycetin, an Antibiotic with Chemotherapeutic Activity in Experimental Rickettsial and Viral Infections, ibid. 106:418-419, 1947.

2. Ley, H. L., Jr.; Smadel, J. E., and Crocker, T. T.: Administration of Chloromycetin to Normal Human Subjects, Proc. Soc. Exper. Biol. & Med. 68:9-12, 1948.

The stage was now set for the clinical application of chloramphenicol to the treatment of patients. This has progressed rapidly in the past year and a half, and a wide variety of rickettsial and bacterial infections of man are now known to be controlled by the proper therapeutic use of this drug. Before discussing the clinical aspects of chloramphenicol therapy, I would like to mention another important laboratory development in its history. This is the chemical synthesis of chloramphenicol (D-[—] threo-2-dichloroacetamido-1-para-nitrophenyl-1,3-propanediol) which was reported a few months ago by Rebstock, Crooks, Controulis and Bartz.[3] The structural formula of the drug (fig. 1) indicates that it is a

Fig. 1.—Structural formula of chloramphenicol.

relatively simple compound consisting of a nitrobenzene nucleus with a propane derivative attached para to the nitro group. That this is indeed the formula of the antibiotic chloramphenicol, which was originally obtained[1] as a fermentation product of the mold Streptomyces venezuelae, N. sp., is indicated by the following facts: The chemically synthesized drug has the same physical and chemical properties and antibacterial activities as the product obtained by the fermentation process.[3] Furthermore, the two forms are indistinguishable when used in the treatment of experimental rickettsial infections in laboratory animals and in the treatment of human beings with scrub typhus (tsutsugamushi fever).[4]

RICKETTSIAL DISEASES

Preliminary work carried on in Mexico[5] and Bolivia[6] provided good reason for the belief that chloramphenicol was of considerable value in the treatment of patients with epidemic or with murine typhus. Extensive and more definitive studies on the related disease, scrub typhus, which were undertaken in 1948 in Malaya,[7] clearly proved the great efficacy of chloramphenicol in controlling this rickettsial infection of man. Figure 2 illustrates the clinical response of one of the Malayan patients with scrub typhus,[7] who was treated on the fifth day with an initial dose of 3.5 Gm. of chloramphenicol by mouth and an additional 3 Gm. given in divided doses of 0.25 Gm. at two hour intervals during the succeeding twenty-four hours. The patient became afebrile within about thirty hours after therapy was begun. He remained free of fever from the seventh day onward, although he received no drug after noon of the sixth day. Untreated patients with scrub typhus generally have a sustained fever for two weeks. Such results as these were consistently obtained in the 30 scrub typhus patients in the original series who were treated with chloramphenicol.[7] Indeed, the average duration of fever in these 30 treated persons was 31.8

3. Rebstock, M. C.; Crooks, H. M., Jr.; Controulis, J., and Bartz, Q. R.: Chloramphenicol (Chloromycetin): IV. Chemical Studies, J. Am. Chem. Soc. 71:2458, 1949.

4. Smadel, J. E.; Jackson, E. B.; Ley, H. L., Jr., and Lewthwaite, R.: Comparison of Synthetic and Fermentation Chloramphenicol (Chloromycetin) in Rickettsial and Viral Infections, Proc. Soc. Exper. Biol. & Med. 70:191-194, 1949.

5. Smadel, J. E.; Leon, A. P.; Ley, H. L., Jr., and Varela, G.: Chloromycetin in the Treatment of Patients with Typhus Fever, Proc. Soc. Exper. Biol. & Med. 68:12-19, 1948.

6. Payne, R. H.; Knaudt, J. A., and Palacios, S.: Treatment of Epidemic Typhus with Chloromycetin, J. Trop. Med. 51:68-71, 1948.

7. (a) Smadel, J. E.; Woodward, T. E.; Ley, H. L., Jr.; Philip, C. B.; Traub, R.; Lewthwaite, R., and Bayne, S. R.: Chloramycetin in the Treatment of Scrub Typhus, Science 108:160-161, 1948. (b) Smadel, J. E.; Woodward, T. E.; Ley, H. L., Jr., and Lewthwaite, R.: Chloramphenicol (Chloromycetin) in the Treatment of Tsutsugamushi Disease (Scrub Typhus), J. Clin. Investigation 28:1196-1215, 1949.

hours after antibiotic therapy was begun. In this group treatment was started on the average 6.2 days after onset of disease, and the last febrile day was 7.4. In contrast, the last febrile day of illness in 19 untreated patients with scrub typhus, who made up the control group, was 17.1 days. In subsequent work, as yet unpublished, carried on by the United States Army Research Unit in Malaya, an additional 70 patients with scrub typhus have been treated with chloramphenicol. The results in these patients completely confirmed the original observations. Although some of these 100 persons were desperately ill when chloramphenicol was given, no deaths occurred in this large group. The mortality in scrub typhus varies greatly in different geographic areas, but in Malaya the fatality rate is about 7 per cent.[8]

There are several rickettsial diseases of man which are of importance in the United States. These are Rocky Mountain spotted fever, murine typhus, Q fever and rickettsialpox. In the laboratory chloramphenicol inhibits the growth of each of the agents responsible for

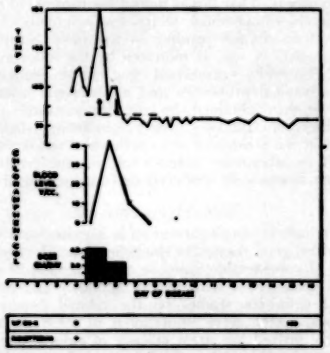

Fig. 2.—Response of man aged 26, who weighed 124 pounds (57.2 Kg.) and had scrub typhus, to chloramphenicol. On the second to last line, WF OX-K signifies that the Weil-Felix reaction showed the development during convalescence of agglutinins for the OX-K strain of Proteus vulgaris, to a titer of 160.

these diseases, and reference has already been made to its efficacy in patients with murine typhus. Information on its use in the treatment of patients with Q fever or with rickettsialpox had not been published to the time of writing.

In the summer of 1948 Pincoffs and associates[9] in Baltimore used chloramphenicol in treating 15 patients with Rocky Mountain spotted fever. These investigators gave somewhat larger doses of drug than had been used previously in other patients with rickettsial infections. Their usual regimen was 0.75 mg. per kilogram of body weight as an initial dose followed by 0.25 to 0.5 Gm. every three hours until twenty-four hours after the temperature reached normal levels. They observed that, irrespective of the height of the preceding fever, the duration of the disease or the age of the patient, all became afebrile within seventy-six hours after therapy was instituted. The average duration of fever after the first dose of chloramphenicol was 2.2 days. None of the 15 treated patients died, although 4 were classified clinically as suffering from virulent forms of the disease when the antibiotic was given. The authors pointed out the sharp contrast between these results and those observed by them in 46 selected patients with Rocky Mountain spotted fever who survived without specific therapy during preceding years and in whom there did not develop complications which might have prolonged their febrile course; here the average duration of fever was sixteen days. They also noted that in Maryland during the past decade the mortality rate for Rocky Mountain spotted fever has been 21 per cent.

In brief, chloramphenicol is decidedly rickettsiostatic for all the rickettsial agents which commonly affect man, and in those human infections in which it has been employed the results have been highly beneficial. Although therapeutic regimens for the rickettsial diseases may be modified as the result of the future work, the general schedule used at present is as follows: An initial loading dose of 3 to 4 Gm. of chloramphenicol is given by mouth, and this is followed with 0.25 Gm. doses every two or three hours until the temperature returns to normal levels. This schedule generally requires 5 to 10 Gm. of drug over a period of one to three days.

It is not the object of this paper to discuss the other new antibiotic, aureomycin, which also has proved extremely valuable in the treatment of patients with rickettsial infections. The experience of others and of our own group indicates that results with aureomycin in these human infections are entirely comparable to those obtained with chloramphenicol.

TYPHOID

Although the finding of a specific therapeutic agent for the rickettsial diseases is of considerable academic and perhaps military importance, the observation that chloramphenicol is also a specific for typhoid is probably of greater significance to the average physician. To the time of writing the medical literature contained only one published report on this subject, that of Woodward and his co-workers[10] in a group of 10 cases of typhoid treated in Malaya with chloramphenicol. However, additional observations by these workers and their collaborators swell the number of their treated cases to about 50. Furthermore, McDermott and his associates[11] have added to the list.

Figure 3 illustrates the results obtained in one of the first group of patients[10] to receive chloramphenicol.

A girl aged 9, who weighed 75 pounds (34 Kg.), was treated on the tenth day of her illness. She received comparatively large doses of the drug and maintained blood levels of about 100 micrograms per cubic centimeter of chloramphenicol during the first three days of the eight day course of treatment. Fever continued during the first three days of therapy, but the temperature remained normal thereafter. Salmonella typhosa were cultured from the blood on two occasions before chloramphenicol was given but not afterward. This girl did not have pathogenic organisms in any of her urine or stool specimens taken from the thirteenth to thirty-sixth day after onset of illness.

The majority of the patients remained free of typhoid organisms during convalescence, but occasional positive

8. Lewthwaite, R.: Clinical and Epidemiological Observations on Tropical Typhus in the Federated Malay States, Bull. Inst. M. Research, Federated Malay States, 3:1, 1930.

9. Pincoffs, M. C.; Guy, E. G.; Lister, L. M.; Woodward, T. E., and Smadel, J. E.: The Treatment of Rocky Mountain Spotted Fever with Chloromycetin, Ann. Int. Med. 29: 656-663, 1948.

10. Woodward, T. E.; Smadel, J. E.; Ley, H. L., Jr.; Green, R., and Mankikar, D. S.: Preliminary Report on the Beneficial Effect of Chloromycetin in the Treatment of Typhoid Fever, Ann. Int. Med. 29: 131-134, 1948.

11. Knight, V.; McDermott, W., and Ruiz-Sanchez, P.: Aureomycin and Chloromycetin: Use in Typhus, Typhoid and Brucellosis, presented at the Second National Symposium on Recent Advances in Antibiotics Research, Washington, D. C., April 12, 1949; J. Clin. Investigation (supp.), to be published.

stool cultures were obtained from some, even though clinical relapses did not develop.

In general, patients with typhoid show little improvement during the first thirty-six hours that chloramphenicol is administered. During the next two days the fever abates by lysis and the toxic manifestations recede. The temperature reaches normal levels on the third or fourth day of treatment, and in most instances convalescence continues uninterruptedly. However, the intestinal lesions remain unhealed for some time after the patient has become afebrile, and the danger of hemorrhage and perforation is appreciable during the first week of convalescence. A relapse with reappearance of fever and of S. typhosa in the blood and stools is another complication which may occur ten days to two weeks after the fever has been dissipated by treatment. Such relapses were observed in 2 of the 10 original patients but were promptly controlled when chloramphenicol was readministered. In order to reduce the incidence of relapses we have now extended the course of treatment, giving the drug for ten to fourteen days after the temperature has returned to the normal range. It is too early to draw conclusions, but this regimen appears to be more satisfactory. At present it would appear that patients with typhoid should probably receive at least 30 Gm. of the drug over a period of ten to twelve days. After the patient receives an oral loading dose of 3 Gm. he should be given a total of 3 Gm. daily in divided doses until the fever disappears, then 2 Gm. daily for the next seven to ten days. Early in the studies on typhoid it was the practice to give 0.25 Gm. amounts at intervals of two to three hours, but recently the members of our group had equally satisfactory clinical results when the same total daily amounts were given in divided doses at eight or twelve hour intervals.

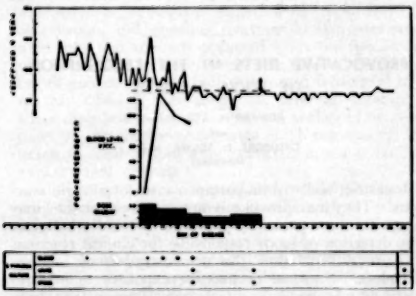

Fig. 3.—Response of girl aged 9, who weighed 75 pounds (23 Kg.) and had typhoid, to chloramphenicol.

OTHER INFECTIONS

Recent studies [12] indicate that chloramphenicol is of considerable value in the treatment of patients with brucellosis. The clinical response and the therapeutic regimen are similar to those in typhoid.

Chloramphenicol given in a single oral dose of 1.5 to 3 Gm. appeared to be about as effective in the treatment of acute gonorrheal urethritis in the male as is the current method of penicillin therapy.[13] This is of interest, because chloramphenicol is less active as a spirocheticide [14] than penicillin; hence, it may be less apt to suppress a concurrent syphilitic infection.

This antibiotic has an in vitro bacteriostatic effect against a number of gram-negative organisms.[15] Its capacity to control the colon bacillus and its excretion in the urine make it valuable in treating certain infections of the urinary tract.[16]

The laboratory has continued to remain a pace ahead of the ward, since experimental work indicates that chloramphenicol is active against Borrelia recurrentis,[16] Vibrio comma,[17] Hemophilus pertussis,[14] and Shigella dysenteriae.[14] It remains to be determined whether the drug will be of clinical value in treating human infections caused by these agents. Similarly, its usefulness against experimental disease caused by members of the psittacosis-lymphogranuloma venereum group of viruses [18] has not yet been tested clinically.

LACK OF TOXICITY IN MAN

The formula of chloramphenicol with its nitrobenzene nucleus suggests, on theoretic grounds, that the compound might be toxic for man. It is important that no significant indication of such toxicity has been observed in the large group of patients who have now received the drug therapeutically. Furthermore, in studies in which chloramphenicol has been used prophylactically against scrub typhus infection in volunteers exposed in hyperendemic areas of the disease, certain persons have received as much as 40 Gm. over a period of two months without showing evidence of intolerance or toxicity.[19]

SUMMARY AND CONCLUSION

Chloramphenicol (chloromycetin®) has now been shown to be of definite value in the treatment of patients with rickettsial diseases, typhoid and brucellosis. It holds promise, on the basis of laboratory studies, of being of value in controlling other infections of man.

Chloramphenicol is of low toxicity for human beings.

ABSTRACT OF DISCUSSION

DR. THEODORE E. WOODWARD, Baltimore: Dr. Smadel in this, and in his numerous publications on chloramphenicol, has emphasized two factors: (1) uniformity of clinical response to treatment and (2) an inhibitory, rather than killing, effect against various infectious agents. At the University of Maryland associates and I have continued observations on various diseases of bacterial and rickettsial origin. In the Salmonella group a total of 25 patients with typhoid have responded favorably to chloramphenicol treatment with improvement of the clinical condition in two days and return of temperature to normal in 3.5 days. Four patients in this series relapsed, and

12. Woodward, T. E.; Smadel, J. E.; Holbrook, W. A., and Raby, W. T.: The Beneficial Effect of Chloromycetin in Brucellosis, presented at the Second National Symposium on Recent Advances in Antibiotics Research, Washington, D. C., April 12, 1949; J. Clin. Investigation (supp.), to be published.

13. Smadel, J. E.; Bailey, C. A., and Mankikar, D. S.: Preliminary Report on the Use of Chloramphenicol (Chloromycetin) in the Treatment of Acute Gonorrheal Urethritis, presented at the Second National Symposium on Recent Advances in Antibiotics Research, Washington, D. C., April 12, 1949; J. Clin. Investigation (supp.) to be published.

14. Smith, E. M.; Joslyn, D. A.; Gruhzit, O. M.; McLean, I. W., Jr.; Penner, M. A., and Ehrlich, J.: Chloromycetin: Biological Studies, J. Bact. 58:425-448, 1948.

15. Ehrlich and others.[1] Smith and others.[14]

16. Chittenden, G. E.; Sharp, E. A.; Glazko, A. J., and Schlingman, A. S.: Chloramphenicol (Chloromycetin) in Therapy of Bacillary Urinary Infection, presented at the Second National Symposium on Recent Advances in Antibiotics Research, Washington, D. C., April 12, 1949, J. Clin. Investigation (supp.) to be published.

17. Gauld, R. L.; Schlingman, A. S.; Jackson, E. B.; Manning, M. C.; Batson, H. C., and Campbell, C. C.: Chloramphenicol (Chloromycetin) in Experimental Cholera Infections, J. Bact. 57:349-352, 1949.

18. Smadel, J. E., and Jackson, E. B.: Effect of Chloromycetin on Experimental Infection with Psittacosis and Lymphogranuloma Venereum Viruses, Proc. Soc. Exper. Biol. & Med. 67:478-483, 1948.

19. Smadel, J. E.; Traub, E.; Ley, H. L., Jr.; Philip, C. B.; Woodward, T. E., and Lewthwaite, R.: Chloramphenicol (Chloromycetin) in the Chemoprophylaxis of Scrub Typhus (Tsutsugamushi Disease): II. Results with Volunteers Exposed in Hyperendemic Areas of Scrub Typhus, Am. J. Hyg. 50:75-91, 1949.

3 responded rapidly to readministration of the antibiotic. The fourth patient with relapse was untreated but recovered. The usual complications of typhoid occur, and chloramphenicol is not a substitute for the normal supportive care needed in these patients. Four subjects known to be typhoid carriers for ten or more years received an average total of 71 Gm. of chloramphenicol over a period of fifteen days and now continue to shed typhoid bacilli in the bile and stool. Ten patients with acute brucellosis of abortus and suis types have responded in a uniform manner to chloramphenicol treatment. The mean value for the day of illness that treatment was begun was 33, and that for the duration of fever after treatment was 2.7. Two patients relapsed, in one and in twelve months. Response to retreatment was immediate, and the offending organism maintained its in vitro sensitivity. Dr. Harry M. Robinson Sr., professor of dermatology of our clinic, treated 13 patients with acute gonococcic urethritis. They have responded to chloramphenicol more favorably with single 3 Gm. doses than did patients given divided doses of equal amount. Three patients with dark field–positive lesions of early syphilis received initial doses of 3 Gm. and subsequent doses of 0.5 Gm. every four hours for varying periods. Serial examination of the lesion failed to reveal Treponema pallidum after thirty-six hours of treatment. These patients are to be studied further. Five patients with Rocky Mountain spotted fever contracted in May 1949 have responded to chloramphenicol in a similar manner, as described by Dr. Smadel. Antibiotic treatment should not be withheld from patients first observed late in their illness. At this stage, in addition to the specific therapeutic measures, particular attention must be directed toward adequate circulatory support.

Dr. Harold T. Hyman, New York: I would like to know about the untoward effect of chloramphenicol as contrasted to aureomycetin.

Dr. Harry Huber, Chicago: I should like to ask about the specific blood picture in patients on whom chloramphenicol has been used. I recently saw a patient who was said to have had a virus infection in November 1948, in whom asthma developed a little later. When I saw him in March 1949 he had a low grade fever, leukocytosis (15,000 white cells) and eosinophilia (25 per cent). This picture prevailed in spite of the usual medical treatment for asthma. He was later given some chloramphenicol. Within three or four days after use of the drug his temperature returned to normal, blood cell count was normal, and his eosinophilia had decreased (5 per cent). There was a recurrence a week later, with a little fever and increase in the white blood cell count and the eosinophilia had gone up (15 per cent). A second course of chloramphenicol reduced the white blood cell count and the temperature to normal; the asthma disappeared, and the man has been quite well since. The eosinophil count came back to normal.

Dr. Francis H. Redewill, San Francisco: I have had considerable experience with chloramphenicol in urologic infections on the Pacific Coast, and I gave a talk before the American Urological Association a few weeks ago on that subject. If the first dose is to be 3 Gm. it is not necessary to give it all at once, that is, twelve capsules. It is best to give 1 Gm. (four capsules) the first hour, 1 Gm. the next hour and 1 Gm. the third hour, then start with 0.25 Gm. every three hours. Chloramphenicol, like streptomycin, has little effect against Staphylococcus aureus, the gram-positive coccus. How is one to take care of that infection? Sometimes, in the urinary tract, infective organisms change: one day there may be Proteus and colon bacilli, and the next day Staph. aureus added. To take care of the staphylococci one must give penicillin with chloramphenicol. I have had good results by giving 300,000 to 500,000 units of penicillin, with absolute effectiveness against Staph. aureus, along with the 3 Gm. of chloramphenicol and continuing with 0.25 Gm. doses of the agent.

Dr. Joseph E. Smadel, Washington, D. C.: Associates and I have observed no significant, untoward effects in patients who received chloramphenicol under our care. In certain instances, when 4 Gm. was given at one time, there was a moderate amount of cerebral stimulation; this was about that which one would expect from 3 or 4 grains (0.19 to 0.26 Gm.) of caffein or a few milligrams of amphetamine sulfate. Nausea, which not infrequently occurs during aureomycin therapy, was not encountered after chloramphenicol. We have no observations along the interesting lines mentioned by Dr. Huber. Early in the work with chloramphenicol, we worried about what this drug might do to the blood-forming organisms, and for this reason careful blood studies were made on our patients. No significant abnormalities were found, and eventually we became sufficiently bold to begin full therapy on patients with scrub typhus in Malaya even though they had severe leukopenia at the time. Some of these patients had white blood cell counts as low as 1,200 to 1,500. Even in these persons the drug produced no evidence of destruction of blood formation; in fact, as the patient recovered from his disease the white count returned to normal. I do not agree with Dr. Redewill's statement that the initial loading dose of 3 or 4 Gm. of chloramphenicol must be given in divided amounts over a period of hours. Even when the original experimental tablets of chloromycetin® were used (these were uncoated and bitter as gall) it was possible to give the designated amount within a few minutes. The chloramphenicol now available is dispensed in capsules which are relatively easy to take. It is true that many patients develop a mental block when confronted with twelve or sixteen capsules, all of which are to be taken at once. However, when the patient realizes the importance of the medicament he can be persuaded to take it.

PROVOCATIVE DIETS IN THE RECOGNITION OF FOOD ALLERGY

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and
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Milwaukee

Ingested foods are important causes of allergic reactions. They may provoke symptoms alone, or they may aggravate those primarily produced by inhaled antigens. The detection of foods responsible for clinical reactions is more difficult than the demonstration of inhalant offenders. Seasonal or massive exposure to inhalant allergens may result in attacks which are evident from the clinical history. Symptoms resulting from continued ingestion of common foods are less easily related to the causal allergens. Both foods and inhalants can cause rhinitis, asthma, urticaria and other manifestations commonly associated with allergic reactions. In addition, less commonly recognized symptoms such as malaise, lassitude and headache, which may occur in inhalant reactions, may also result from food allergy. However, these symptoms alone, especially in the absence of demonstrated inhalant sensitivities, cannot be accepted as evidence of food allergy. Functional or organic disease is more apt to be responsible.

Food allergy may occur at any age but is seen much more frequently in children. In infancy, the relation between symptoms and specific food ingestion is often recognized by the parent. A definite history of such early intolerance often is of material aid in the recognition of food allergy in later life. Adult patients who had unquestioned food allergy in childhood, if maintained on a restricted and monotonous diet, may break the tolerance that previously had been established for such childhood sensitivities. Such breaks in tolerance are most apt to occur after illness, especially if that illness is associated with digestive disturbances. In the latter circumstance, one may suspect increased passage

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of undigested protein through the protective barrier of the gastrointestinal tract.

Reports attributing symptoms to food allergy often are not in accord with known facts of allergic reactions, either in experimental animals or in man. Undue emphasis is placed on complete exclusion of minute traces of specific food allergens from prepared foods. Passage of unaltered protein through the gastrointestinal tract occurs most readily in infancy and early childhood. In adults, after excessive ingestion of certain foods, enough protein may be absorbed to reactivate a preexisting food sensitivity and cause clinical symptoms. The purpose of this discussion is to emphasize not only that a definite threshold of food antigen absorption must be exceeded before ingested foods can cause a clinical reaction but that food allergy is not clinically present when a suspected food can be taken in large amounts for several days without subjective or objective evidence of intolerance.

Unaltered protein molecules can and do pass into the circulation after ingestion of foods. Walzer [1] demonstrated that urticarial whealing could be produced in a passively sensitized skin site after the specific test food was eaten. Subsequent experiments confirmed this observation, and whealing reactions in skin sites sensitized with fish antibody occurred when the specific fish was eaten later. Ratner [2] was able to sensitize a number of guinea pigs by continued forced feeding of milk, so that when it was again fed, after an interval of about three weeks, allergic reactions evidenced by symptoms of varying severity, from mild respiratory irritation to fatal anaphylaxis, occurred in about half the experimental animals.

Clinical symptoms are produced in allergic reactions only when absorption of the specific antigen, whether injected, inhaled, ingested or otherwise encountered, exceeds the threshold of specific tolerance at a given time. Small doses of ragweed may be injected subcutaneously without symptoms, but if the dosage is increased beyond a certain threshold, local and general reactions occur. The same amount of ragweed antigen tolerated without symptoms after a slowly absorbed subcutaneous injection can cause violent shock after intravenous injection. Both the speed and quantity of ingested proteins are greatly reduced when compared with that of proteins which are either inhaled or parenterally administered. Spies and his co-workers [3] found that skin sites which had been sensitized with a purified fraction of cottonseed antigen (CS-IA) and which reacted with urticarial wheal formation after a test injection of a solution containing 100 micrograms of this fraction required 8,000 times as much of this material to cause a reaction when it was taken by mouth. When crude cottonseed meal was fed, the amount required to cause a similar reaction in the sensitized sites increased to 20,000 times the amount of the injected purified fraction. Similarly, Bernstein and Feinberg [4] showed that skin sites passively sensitized with ragweed antibody showed no flare or other evidence of reaction after ingestion of as much as 5 Gm. of ragweed pollen. These experiments conclusively show that the quantity of specific protein absorbed from the gastrointestinal tract is only a small fraction of that which would enter the circulation if the same amount were given parenterally. Accordingly, relatively large amounts of antigen may be taken without exceeding the threshold of tolerance for the production of symptoms.

The variation in the allergenic activity of different foods is great. Certain foods are such potent allergens that minute amounts can and do cause violent symptoms. Fish, nuts and many seeds belong to this extremely active group. Sensitivity to such food is almost invariably recognized by the patient because of the immediate and violent reaction. Avoidance must be complete or the threshold of tolerance will be exceeded. Because reactions to minute amounts of some foods occur, extreme measures of avoidance are often advised for less active allergens. Milk-sensitive patients, for example, are told that all cooked foods containing milk must be scrupulously avoided. We have never seen a milk-sensitive patient who gave evidence of intolerance for the small amounts of milk present in baked foods. Misguided and needless extremes of avoidance make the preparation of foods most difficult. When such extremes are recognized by the patient as unnecessary, it leads to disregard of other essential measures of allergic management. These fundamental principles must serve as guides in the management of all patients with food sensitivities.

Every adequate study of allergy must consider the possibility of food sensitivity. Those patients who describe in detail bizarre reactions and who unhesitatingly attribute these reactions to infinitesimal amounts of specific foods may be more in need of psychiatric guidance than of care for allergy. As in all fields of medicine, the history provides valuable clues, and there can be no adequate allergic study without a good history. The story of reactions which may have occurred in infancy and childhood is of the greatest value. Although tolerance may have been established, excessive ingestion of a food which in childhood caused symptoms may lead to a return of specific intolerance.

Skin tests at times can and do provide suggestive and helpful information. Bakers sensitive to wheat flour almost always have positive skin reactions to wheat and often strikingly demonstrate the fact that inhalant sensitivities can exist to a specific food allergen which may be taken by mouth without symptoms. Although some bakers sensitive to wheat as an inhalant also have symptoms when wheat is eaten, frequently wheat foods can be eaten without any demonstrable reaction.

Since food sensitivity to split or altered fractions of foods can exist, clinical food allergy may be present when the reactions to skin tests are negative, and diagnosis is only possible by diet trial. Some physicians have found elimination diets helpful. However, interpretation of results is difficult and often leads to false assumptions. Improvement observed after an elimination diet has been started usually is interpreted as evidence that the withdrawal of the excluded food resulted in improvement and, as a corollary, that the symptoms were therefore due to food allergy. This essentially negative evidence is often accepted as proof without further diet trial. As a result, patients are seen all too often who have continued an extremely limited diet for months at a time. Sometimes such patients are not allergic. The demonstration of true food sensitivity requires positive evidence. Symptoms must be produced repeatedly when the suspected food is fed, even though it is fed in disguised form. When food

1. Walzer, M.: J. Immunol. 14: 143, 1927.
2. Ratner, B.: Allergy: Anaphylaxis and Immuno-Therapy Baltimore, Williams & Wilkins Company, 1943, p. 299.
3. Spies, J. R.; Chambers, D. C.; Bernton, H. S., and Stevens, H.: Quantitative Estimation of the Absorption of an Ingested Allergen, J. Allergy 16: 267 (Nov.) 1945.
4. Bernstein, T. S., and Feinberg, S. M.: Oral Ragweed Pollen Therapy, Arch. Int. Med. 61: 297 (Aug.) 1938.

sensitivity is present, symptoms regularly appear after approximately the same lapse of time following ingestion. The production of clinical reactions by the feeding of a suspected food provides evidence which is much more convincing than the negative evidence of improvement after withdrawal. However, when symptoms appear to have been produced by the trial ingestion of a specific food, other possible causes, such as exposure to inhalant allergens, an intercurrent respiratory infection or even simple coincidence, must be excluded.

For several years we have used a simple provocative diet as an aid in the evaluation of food factors in allergic patients. This diet was first described by Andreson [5] and later modified by Black.[6] Unless the history or observations contraindicate, wheat, milk, egg, beef, orange and potato are eaten exclusively for a trial period of approximately a week. These foods, which are the major constituents of a normal diet, provide adequate nutrition, and the regimen can be followed with a minimum of discomfort. They also are the foods most frequently responsible for food allergy. When sensitivity exists to any of these major foods, increased symptoms are almost always evident before the end of the trial period and may become increasingly severe. When this forced and exclusive diet can be taken without the evidence of exacerbation of symptoms, both patient and physician have an adequate demonstration that the foods in question cannot be of causative importance. It must again be emphasized that when exacerbations occur with this provocative diet, further observation and trial is essential before food factors can be finally incriminated. Increased exposure to pollens or other inhalant allergens may have occurred at the same time. Diet trial, regardless of the type used, is always more difficult during the pollen season in patients who are pollen sensitive, but repeated trial will in time give a satisfactory answer. Such a provocative diet can of course be modified as indicated by special circumstance. It provides a satisfactory method for obtaining positive evidence of tolerance for basic foods. The extreme depletion which all too often results from ill advised and long-continued elimination diets will never occur if provocative diets are used. Often, by the time the trial diet has been completed in the allergic study, food factors can be reasonably excluded. On the other hand, when the evidence indicates that symptoms are indeed caused by foods, subsequent investigation, based on information already obtained and suggested by the history and diet record, can be carried out by diet trial.

CONCLUSION

We recognize that food allergy does occur and can be an important cause of allergic disease. Reactions caused by foods are comparable in all respects to hypersensitivity reactions in general. Definite criteria for recognition exists, and rigid standards must be met before the diagnosis of food allergy can be accepted. We believe that the use of the provocative diet described will aid in avoiding unjustified elimination, based solely on subjective evidence, of certain foods. Sensitization to suggestion will be minimized. The provocative diet is a positive aid in the identification of specific food allergens and in the intelligent management of patients with real food intolerance.

5. Andresen, A. F. R.: Ulcerative Colitis: An Allergic Phenomenon, Am. J. Digest. Dis. 9: 91 (March) 1942.
6. Black, J. H.: Practice of Allergy, St. Louis, C. V. Mosby Company, 1948, p. 293.

ABSTRACT OF DISCUSSION

DR. HAL MCC. DAVISON, Atlanta, Ga.: The diagnosis and treatment of food sensitivity is a most important problem. Many instances of allergy to foods are overlooked because physicians do not consider the possibility of allergy as a cause of the patients' symptoms. The incidence of allergic manifestations in man is becoming more frequent, and the question arises as to the cause. Bronfenbrenner of St. Louis showed that guinea pigs with scurvy are readily sensitized to egg white by ingestion. Pottenger of Monrovia, Calif., produced asthma, allergic coryza, skin lesions and gastrointestinal symptoms in cats by feeding them cooked foods only. It required proper feeding of raw foods for four generations to eradicate the allergy in the offspring of these cats. It is known that the allergic state may affect the nutrition of patients; it is also known that various states of malnutrition facilitate the production of sensitivity in experimental animals. Subclinical malnutrition may, therefore, be the responsible factor in the increase of allergy in man, and the production of the allergic state in an infant may depend more on the state of nutrition of the pregnant mother than on any other one factor. It is nearly always necessary to prove to patients that they are sensitive to foods before they will undergo the deprivation necessary for successful treatment. The best proof of food sensitivity is the fact that symptoms are relieved by removal of a food from the diet and reproduced at will by reintroduction of that food into the diet. It is not wise to depend on any one method for the diagnosis of food sensitivity. The information obtained from history and skin tests may be a sufficient guide to successful treatment. If not, depending on the patient's physical condition and other practical considerations, my associates and I use one of the following methods: Rowe's elimination diets; Gay's five diets; Alvarez' rice, lamb and pears; Black's provocative diet; Rinkel's clinical food tests; the milk diet, and starvation (water, salts and chemically pure dextrose). Drs. Lee and Squier have stated the reasons why the use of the provocative diet of six or eight common foods is an excellent method for the diagnosis of food sensitivity. However, at times the use of this diet causes an undesirable increase of symptoms, while at other times the increase or decrease in symptoms is so slight as to be inconclusive. When there has been no conclusive change, we have at times been able to prove food sensitivity by the use of the starvation diet. We find that we are using this last method more and more often, because, after all, it is the quickest way to determine whether unrelieved allergic symptoms are primarily due to food sensitivity or not.

DR. PHILIP M. GOTTLIEB, Philadelphia: The paper by Drs. Lee and Squier on provocative diets is certainly provocative. No one can take issue with their primary thesis that any food eaten frequently in any quantity and still tolerated by the patient without symptoms is a food to which that patient is not sensitive, nor will anyone take issue with their thesis that the addition of a food to the diet is a more positive and more definite way of proving food allergy than the negative evidence adduced by elimination diets and similar methods. However, those who have tried such methods often run into psychic conflicts because the patient has been repeatedly told, usually on the basis of a skin test, never to partake of one particular food. It takes some persuasion, to induce patients to take the food, and when they do there is so much fear of the consequences that it is frequently difficult to evaluate the clinical response. I have adopted a number of clinical methods of circumventing this difficulty. One is to prescribe dry skimmed milk, egg powder, wheat flour or the like in capsules, without the patient's knowledge of the contents. When that technic is used, the symptoms that follow can hardly be claimed to be due to psychosomatic factors. I have also introduced the food into the barium used during roentgenologic studies; the barium meal hides and disguises the nature of the food. Another way is to introduce the food without the patient's knowledge through a gastric tube or a Levine tube. I am forced to take issue with Dr. Lee regarding the occurrence of sensitivities of considerable severity following the ingestion of small quantities of processed and cooked foods. I know of one patient who had definite allergic symptoms following the ingestion of one drop

of 1:10 dilution of milk, and I am sure that patient had symptoms whenever milk was taken in a disguised form in food. However, I must agree with Dr. Lee that there are quantitative tolerances. It is sometimes possible, with cooperative patients, to determine the exact level of the quantitative tolerance. I had a patient who by repeated trial and error proved that he could take 1 ounce (30 cc.) of milk in his coffee without symptoms, but if he drank one 8 ounce (237 cc.) glass of milk at one time, he would invariably have symptoms. Similarly, a physician was able to take 2 squares of commercial chocolate without having migraine, but the ingestion of 4 squares would result in migraine. The leukopenic index is another method of attempting to clarify certain obscure cases of food sensitivity. However, the method is time consuming and tedious.

DR. HOWARD J. LEE, Milwaukee: Dr. Davison gave the reasons why Dr. Squier and I prefer to use the provocative diets which were outlined. The patient who will not eat certain foods because of a psychic conflict presents the primary reason for the use of the diet trial. Unfortunately, occasionally one sees patients of that type who will not eat the food even if it is demonstrated to them that they are not sensitive to it. They are definitely in need of psychiatric help. The statement about milk was that we have not seen a patient who was milk sensitive who could not tolerate milk in baked foods.

REHABILITATION OF THE QUADRIPLEGIC PATIENT

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New York

There is no more formidable disability in medical experience than quadriplegia. In the past, this disability has been approached with an attitude of hopelessness and futility by both physician and patient. The following report which outlines experience over the past two years with a group of 23 patients who were quadriplegic when admitted to the Rehabilitation Wards at Bellevue Hospital refutes the validity of this attitude.

All the patients in this series had pathologic conditions of the spinal cord in the cervical region due to trauma or disease. Those with progressive diseases such as multiple sclerosis were not included. The 23 cases included 10 of traumatic origin (fracture, fracture-dislocation, dislocation and contusion), 3 poliomyelitis; 3 bony exostosis (hypertrophic arthritis), and 2 arachnoiditis. The remaining cases included hemangioma, multiple neurofibromatosis (von Recklinghausen's disease) and 1 intrinsic cord lesion of undetermined causation.

In evaluating quadriplegia, the first consideration is to determine the height of the lesion by a routine neurologic examination. In 8 of the traumatic cases there was involvement of the fifth and sixth cervical vertebrae. Stewart's [1] studies of the distribution of arthritic lipping in the vertebral joints revealed that there was a maximum amount of change of the vertebral bodies in the cervical regions at the level of the fifth and sixth vertebrae. In seeking an explanation for this site of traumatic election, he studied a series of patients with lateral roentgenograms of the cervical spine in hyperextension and hyperflexion. By plotting the arc of each vertebral motion, he found that the maximum movement occurs between the fifth and sixth vertebrae. Because of this mechanical phenomenon, this level becomes the logical site of traumatic selection of cervical injuries. It is an unfortunate site because the major nerve roots innervating the triceps muscle are frequently damaged at this level. Since adequacy in crutchwalking is dependent on a strong forearm extensor group of muscles (triceps) the significance of trauma at this site is apparent.

In the rehabilitation of the quadriplegic patient it is of prime importance that he be seen early, in order that spasticity and other contributing causes to contractures may be controlled. The status of bowel, bladder, decubitus ulceration and general paresis of the trunk and abdomen must be appraised in terms of their severity and amenability to correction before rehabilitation is considered.

The management of the quadriplegic patient is twofold: (*a*) definitive measures directed toward preparing the patient for rehabilitation and (*b*) the rehabilitation training program.

The definitive measures are:

1. Prevention of deformities or contractures (*a*) by the judicious use of splints (plaster of paris, plastic, footboards and sandbags) and (*b*) by a planned procedure for passive motion by a therapist or nurse to all movable joints.

2. Exercises: At the earliest permissible time active and passive exercises should be begun to prevent atrophy of disuse, to maintain or improve muscle strength and to prevent the deconditioning phenomenon of bed rest. Particular efforts should be extended toward maintaining strength in the arm and hand muscles. Reverse push-ups (pushing sandbags or dumbbells) are of particular benefit. Breathing exercises to maintain normal aeration, to correct reverse breathing and to establish new breathing patterns are likewise necessary.

3. Care of the skin: The management of decubitus ulcers may be considered as twofold, prophylactic and therapeutic. The usual prophylactic measures are frequent turning and keeping the bed clothes and patient dry. The necessity for maintenance of general nutrition and the necessity for protein supplementation directed toward maintaining normal blood protein levels as well as vitamin supplementation are obvious. The full thickness skin graft for the closure of large decubitus ulcers has been the most effective measure in this group.

4. Bowel and bladder training: Measures should be undertaken for regulation of sphincter impairment as soon as feasible. Evaluation of the bladder status should be made as indicated. A catheter should never be left in the urethra for more than five days without being changed, as calculi formation around the catheter tip often occurs. Routine urinalyses should be performed in order to insure the early treatment of urinary infections. As soon as possible, the patient should be placed on a rigid twenty-four hour training schedule starting with one-half hour intervals for voiding, and the intervals should be increased to individual tolerance. Several of the patients in this group are presently on a four hour schedule. The management of the bowels usually resolves itself to one of constipation which can be controlled through the use of bulk-forming foods, and enemas or glycerin suppositories as necessary.

5. Prevention of cardiovascular and respiratory deconditioning: All patients in this group exhibited a blackout, syncope-like phenomenon when the first attempts to sit up were made. Since the work of Dietrick and his associates [2] demonstrated the hyperreaction to the tilt-top table after prolonged bed rest, it seems obvious that semirecumbent posture for at least part of the day is indicated. After prolonged bed rest the patient

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From New York University College of Medicine, Instructor, Department of Rehabilitation and Physical Medicine (Dr. Sverdlik); Professor and Chairman of the Department of Rehabilitation and Physical Medicine (Dr. Rusk).

1. Stewart, T. D.: Personal communication to the authors.

2. Dietrick, J. E.; Whedon, G. D., and Shorr, E.: The Effect of Bed Rest and Immobilization upon Various Chemical and Physiological Functions of Normal Men: Their Modification by the Use of the Oscillating Bed, read before the Conference on Metabolic Aspects of Convalescence Including Bone and Wound Healing, Josiah Macy, Jr., Foundation, Twelfth Meeting, February 4, 1948.

should be kept in the sitting position for only a few seconds the first day, and thereafter the intervals should be gradually increased to full tolerance.

Before instituting any rehabilitation program three tests are necessary to evaluate the extent of the disability. The first test is a comprehensive definitive muscle test using the National Foundation for Infantile Paralysis scale of grading (normal, good, fair, poor, etc.). The second test is for joint range of motion. The third test, and probably the most informative, is an Activities of Daily Living Test,[3] which is a list of ninety-nine simple self-care and ambulatory activities, the performance or nonperformance of which indicates the degree of disability. This third test is divided into two main categories, nonwalking activities and walking activities. The nonwalking activities are such items as moving in bed, performing toilet functions (brushing teeth, combing hair, shaving and washing), eating and drinking activities, dressing, writing, opening and closing doors, getting from the bed to the wheelchair, to toilet seat from wheelchair, and into or out of an automobile. The person with partial quadriplegia can often ambulate satisfactorily with adequate bracing and proper training in the use of crutches; in this event the test would include walking on flat surfaces, up standard ramps, curbs and steps, and finally onto and off public transportation vehicles. It is not possible to teach ambulation and elevation to the patient with complete quadriplegia. His program must be designed for a wheelchair existence.

On the basis of these observations the extent of disability is accurately established. These functional tests describe the extent of the disability in such terms as are easily understood by the patient; they also afford the physician a clear picture of the problem with which he is faced. They define his problem so that he may deal with "first things first" and avoid injudicious use of time and effort in attempts to ambulate a patient who cannot get in or out of bed. This functional test also affords an opportunity for gaging the efficacy of treatment in terms of accomplishments.

On the basis of the total evaluation data, the patient is placed on a five hour training program. Physical therapy, in the form of heat, is usually used prior to any exercise session, particularly if any pain or spasticity is present. Hydrogymnastics, electrical stimulation of muscles and ultraviolet radiation are all valuable. Occupational therapy is prescribed for both its psychologic and specific physiologic and functional values. Such activities as would require hand and arm motions are obviously beneficial to these patients. Special training routines are instituted to teach the patient how to roll from side to side in bed and how to sit up in bed. Mat exercises, push-ups on the mat, wall pulleys and similar exercises are added at opportune times in an effort to improve the strength of the upper part of the body. Periodic muscle tests are done to evaluate the degree of return of muscle power.

Accurate prognosis in quadriplegic patients can be made only after a preliminary period of six weeks of rehabilitation training. After this period and a reevaluation of the status of the patient, noting return of motor power, the psychologic attitude toward his disability and the social and vocational problem, a long range program may be outlined. It has been found that the full utilization of the patient's waking hours in any form of activity, using occupational therapy and recreational therapy, makes for a more cooperative patient. Activity alleviates anxiety. The success or failure of any rehabilitation program rests with the patient's attitude toward his disability, and this cannot be overemphasized in the case of quadriplegic patients. Time spent with the patient and the family in discussing the problem with which they are faced is invaluable for future orientation and planning.

Mechanical devices play an important role in fostering independence in these patients. An important device is an abdominal corset to overcome flaccid abdominal muscles and diaphragmatic paresis, thereby establishing adequate breathing mechanisms. In 3 cases in the reported group this abdominal support was found to be essential in order for them to remain in the sitting position without dyspnea. In 1 case of traumatic quadriplegia it was found that the use of a partially inflated basketball bladder inside an abdominal binder was necessary to provide added resistance.

Large grips on forks, knives, combs and toothbrushes are necessary when finger flexion is weak. Extended handles on these utensils enabled patients with poor elbow flexion to help themselves. Recumbency glasses, automatic page turners and projection devices which are available for bedridden patients are often extremely helpful. One patient was afforded greater independence in his legal practice through the use of an electrically activated typewriter with a remote control keyboard. Although his weakened fingers could not activate the standard keyboard, they had sufficient strength for this special sensitized keyboard. He also uses a telephone, which is secured to a laboratory ring stand with a buret holder. A toggle switch device which he can easily handle enables him to make normal use of the telephone. All these devices can be secured from local telephone companies at a moderate cost.

The bed for the quadriplegic patient should have a soft foam rubber type mattress. The sheeting materials, bed covers and rubber sheeting should be carefully selected so as to avoid any irritating surfaces that may produce undue skin trauma. The height of the bed should be the same as the seat height of a standard wheelchair (22 inches, 66 cm.), because this facilitates the patient's moving from the bed to the wheelchair. The use of a trapeze over the head of the bed provides the patient with a means of raising himself up to a sitting position or helping himself onto a bed pan. Beyond this, the trapeze cannot be considered as therapeutically effective, since exercises with this device only strengthen forearm flexor muscles and do not strengthen the important forearm extensor group.

The selection of the wheelchair for the quadriplegic patient is of paramount importance and the type should be as carefully prescribed as specific drugs. The collapsible aluminum wheelchair has proved to be the best type. Upholstered armrests, foam rubber cushions, high back extensions for headrests, lap boards and arm slings coming off goosenecks from the back of the chair make for greater comfort and independence in a wheelchair. The placement of the drive wheel either fore or aft is often the difference between dependent and independent movement. Self-propelling wheelchairs are available, but the experience in this study does not justify any comment on their merit. In certain selected cases, however, they may be helpful.

An L shaped attachment to the armrests of a wheelchair allowed one patient to get into and out of her wheelchair unaided. The armrest height required an

3. Deaver, G. G., and Brown, M. E.: Physical Demands of Daily Life, New York Institute for the Crippled and Disabled, 1945.

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angulation of her elbow which placed her weakened forearm extensors at a mechanical disadvantage, but when the arm was less acutely angulated she was capable of performing this activity.

Wooden knobs placed on the drive wheel rim allow for gripping where weak grip exists. The crutches for many of these patients require stabilization straps above the handle in order to minimize wrist mobility. Specially designed clothes are also helpful. Zippers or hooks can replace buttons. Imagination and ingenuity are important in creating new devices to make these patients more comfortable and self sufficient.

REPORT OF CASES

The following reports of 2 cases illustrate rehabilitation problems in the quadriplegic patient.

CASE 1.—S. K., a white man aged 28, was admitted to the Rehabilitation Ward of Bellevue Hospital in February 1948 with a history of three episodes of injury to his neck and head, the first in April 1944. Bloody spinal fluid was obtained by lumbar puncture following each attack, and by October 1945 weakness developed in all four extremities, with increased reflexes, sphincter impairment and patchy sensory loss to pinprick and touch from the level of the sixth cervical vertebra downward. In April 1947 a laminectomy was performed and a cavernous hemangioma was found between the fifth and seventh cervical vertebrae. A decompression procedure was done, but the hemangioma was not removed. Because of the severe spasticity and generalized clonus, the patient could only perform eighteen of the ninety-nine functions in the test of activities of daily living.

His program consisted of muscle-strengthening exercises for his upper extremities, preceded by thermotherapy. With improvement in the strength of his upper extremities, particularly the triceps and finger flexor groups of muscles, from fair to good, he was fitted with double bar long leg braces with a pelvic band. Eight weeks after admission he was capable of maintaining an erect position in braces. Over the next eight weeks he gradually gained ability to perform all self care, walking and climbing activities to the extent of climbing two hundred or more steps without assistance. At present his braces have been reduced to a foot drop brace with a 90 degree stop on a stirrup attachment on his right shoe. He uses one cane and is completely independent and capable of returning to work.

CASE 2.—E. G., a white man aged 29, was admitted to the Rehabilitation Ward of Bellevue Hospital in May 1948. He was unable to walk because of progressive weakness and ankylosis in all four extremities, which had its onset twelve years prior to admission, with pain in the right interscapular region followed by gradually developing weakness, particularly on the right side. Many sacral decubitus ulcers and a shortening of the left leg had developed in the intervening period. A laminectomy was performed on the basis of diminished sensation to pinprick at the level of the fifth cervical vertebra, and a bony exostosis was found impinging on the cord at this level, bridging the interspace between the fourth and fifth cervical segments. This observation had not been determined by prior roentgenograms of the cervical vertebrae. Following recovery from this procedure, the patient was transferred to the Rehabilitation Ward for training. He was found to have poor extensor muscles in both hands and flexion deformity at both wrists. His forearm extension bilaterally was poor. He had flexion contractures at both hips and knees and an ankylosis of the left heel. He could perform only 19 of the 99 activities of daily living.

His program was similar to that described in case 1 with the exception that a long leg brace with an extension to his left shoe was tried in an effort to accomplish walking. However, the brace aggravated the gluteal area producing an ulceration, and only after several attempts at closure was this controlled. As a result of many previous lesions, there was little skin with which to repair this lesion. Since ambulation was not feasible, he was trained for wheelchair existence. His home was found to be adequate for self care in the wheelchair, with the exception of the entrance to the bathroom. This was corrected by removing some shelving near the bathroom door. He is now completely independent in the wheelchair, and possibilities for home employment are being investigated.

COMMENT

In the 23 quadriplegic patients admitted to the wards at Bellevue Hospital, the onset of disability on admission to the Rehabilitation and Physical Medicine Service varied from five weeks to twenty-five years. The average stay was twenty-one and one-half weeks. However, this was not all actual training time, as many patients remained on the rehabilitation wards while receiving definitive treatment for their decubitus ulcers, for various orthopedic and urologic problems, and in many instances because of home and housing problems. The actual rehabilitation training time necessary to bring the patient to maximum improvement was twelve weeks.

The final results may be evaluated as follows: of the 23 patients, 13 became ambulatory; 5 of the 13 did not require any braces. Of the remaining 10, 5 became wheelchair independent and 3 became wheelchair dependent (required assistance in getting into and out of their wheelchair), 2 remained primarily bed and limited wheelchair patients.

Of the 23 patients, 18 were considered employable. Eight are presently working, 1 of whom is wheelchair bound. Of the remaining 10, 3 are wheelchair patients who are potentially employable, 4 are undergoing vocational training, 2 are job placement problems and 1 is at present attending college. With an enlightened attitude toward employability, 3 of the 5 patients not considered employable could well perform some duties as in-institution employees.

Quadriplegia is one of the most severely disabling physical disabilities encountered in the practice of medicine. However, when the modern technics of rehabilitation are used, the attitude of hopelessness and futility is not justified. The rehabilitation program for the quadriplegic person must embody patience, imagination, understanding and the "rehabilitation team" approach. With such a program a large majority of persons heretofore considered hopeless invalids can be trained for useful dignified living.

ABSTRACT OF DISCUSSION

DR. H. WORLEY KENDELL, Chicago: Heat in relation to many problems in physical medicine becomes a routine procedure, but it cannot be prescribed without caution for the paraplegic patient. I would like to ask the author the type of heat, how much has been employed in the technic, the area that is heated at any one given time, and what technic is used to guard against overheating; also an opinion as to the relative importance of heat against the possible complications that one might encounter in the over-all treatment program of the quadriplegic person.

DR. NICHOLAS D. MAURIELLO, Wilkes-Barre, Pa.: I would like to ask the author what he uses in the management of lymphedema of the lower extremities of these cases. I would also like to ask him his experience with mephenesin (tolserol®) or neostigmine to reduce spasms; also whether he knows of any signs by which one can prognosticate which quadriplegic patients will make a good recovery. Some who can walk around and rehabilitate themselves recover so thoroughly that they can walk with a cane. The fellow patient with quadriplegia wonders whether he will be able to do the same.

DR. H. BURT, London, England: In England most of the paraplegic patients are treated in one hospital. There are whole wards full of paraplegic persons. A patient who thinks he has absolutely no chance of doing any work is in the bed next to somebody who has been in for a year and who can manage well. The arrangement has proved to be good indeed. A few nearby houses have been taken over by the hospital, and when the patient has recovered to a certain extent, he goes to one of these houses with his family, and for a week or a fortnight they practice, as it were, living together. The relatives have pointed out to them the various difficulties, and if anything goes wrong, it is put right. This system has been a great help in getting the patients back to a moderately reasonable and normal life.

DR. F. F. SCHWARTZ, Birmingham, Ala.: I would like to ask the author to describe his management of contractures of the lower extremities with marked clonus and spasm and to comment on electrical stimulation of the quadriceps surae, especially where there is spasticity.

DR. SAMUEL S. SVERDLIK, New York: In answer to Dr. Kendell's question regarding heat, we have found that in the presence of severe neurologic disorders, nothing but radiant heat is feasible. We have to allow ourselves the privilege of seeing the skin beneath the heating element, and we are cautious lest any unnecessary burns be produced. Also, the existence of concomitant vascular deficiencies in this neurologic derangement doesn't allow for any contact heating device at all. Heated water likewise must be used guardedly in view of the fact that we might unduly traumatize the skin. The time element necessary for the production of any desirable effect by heating is varied. Ten minutes was found to be minimal, and we never went beyond twenty minutes in any case. In answer to Dr. Mauriello's question, we did not run into the problem of lymphedema to any pronounced degree in this group, although lymphedema is common in paraplegic persons. The use of antispasmodic drugs such as mephenesin or neostigmine likewise was not particularly effective or necessary in this group with quadriplegia. We have not encountered unmanageable spasticity in quadriplegic patients. Bracing has controlled this condition as adequately as any drug therapy that we have used. The prognosis in these cases is exceedingly evasive in terms of pure clinical evaluation. A simple dislocation will often result in severer disability than a dramatic fracture, and the only test that can be considered is the test of time and trial. Treating all these patients by the routine described and seeing the degree of response that occurs after a period of six weeks will give one more insight into the prognosis than any clinical sign. The existence of priapism and other such signs that have been described in neurology textbooks do not in any wise affect rehabilitation prognosis in these cases. Concerning Dr. Schwartz's comment on the use of electrical stimulation to control clonus and minimize contractures, we have not encountered severe clonus and spasticity that was unmanageable with drugs or other devices; we did not require the use of electrical stimulation to combat the clonus, and we have found in this particular group that braces have been sufficient.

DR. HOWARD A. RUSK, New York: Next to automobile injuries more of our traumatic quadriplegias have been due to surf accidents than any other cause. Persons dive into the wave, and it twists them; then the body acts as the lash of the whip, and the fifth and sixth cervical vertebrae being the weak point, the snap is there. Last summer we had 4 patients on our ward with fractures between the fifth and sixth cervical vertebrae, all due to surf diving or rolling in with the waves. The danger of fracture has been inadequately pointed out in all of our water safety programs. One other point might be worth emphasizing, and that is the necessity for the physician in charge of these quadriplegic patients to visit the patient's home before he is discharged from the hospital. In 1 of the cases reported, it would have been impossible for the patient to take care of himself at home had not a few simple changes been made, the sills taken off the bathroom door and some shelves removed that would allow turning of the wheelchair. Initiating such home changes is just as important as any other of the integral facets of the total training program, and if the physician fails to do that, in some instances he has not met a primary need of his patient. One method that we have used to control lymphedema in paraplegic patients is pulley therapy and an overhead frame, with a pulley set about 3 feet (91 cm.) back from the end of the table and the feet put up in stirrups of the type that one would put a patient in to perform a pelvic examination. With the overhead pulley coming back and the hand grip, we give our paraplegic patients Buerger's exercise when indicated. It is excellent exercise in developing the shoulders and upper arm muscles. We have found it effective against lymphedema along with sodium limitation and in some cases water diuresis. On both services in New York, we give these patients an antispasmodic drug, whether mephenesin or curare, for five days. If one is not effective, we switch. We know that it is not too scientific, but the trial and error method has been the most useful one in our hands. In the quadriplegic patient, if operative intervention is possible, we favor early exploratory laminectomy, not only for the possibility of immediate therapeutic relief but also for its value in talking factually to the patient and getting him to accept his disability and training.

PROPHYLACTIC ADMINISTRATION OF PENICILLIN TO OBSTETRIC PATIENTS

Additional Data

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and
E. D. PLASS, M.D.
Iowa City

A previous communication[1] recorded our experience with the prophylactic administration of penicillin to women during labor and shortly after delivery between Feb. 3, 1947 and Jan. 31, 1948. In that study a control group of 430 patients was compared with two treated series given 600,000 (202 women) and 900,000 units (263 women) of penicillin. Patients were grouped alternately according to their admission to the labor rooms. Women delivered abdominally and those receiving penicillin therapeutically for any reason were excluded, but no other selection was employed. Penicillin suspended in beeswax and oil was used for the first ten months, but subsequent to that date penicillin G in oil and wax was utilized. The two groups showed a distribution according to parity, financial status, incidence of operative intervention and gestational and parturitional complications similar enough to make comparisons reasonably valid.

The penicillin-treated group showed no significant reduction in intrapartum fevers or one day fevers, suggesting that such elevations in temperature are not generally attributable to infection, at least not to infection with penicillin-sensitive organisms. The incidence of fevers lasting two or more days, generally viewed as evidencing significant infection in the pelvis or elsewhere, was reduced from 10.2 to 4.7 per cent. Moreover, when the prophylactic dose of penicillin was 900,000 rather than 600,000 units (initial dose 600,000 as compared to 300,000 units), the two day fever rate fell from 6.9 to 3 per cent, indicating the superiority of the larger initial dose, which produces higher blood levels and more prolonged action.

From the Department of Obstetrics and Gynecology of the University of Iowa College of Medicine.
Dr. J. H. Allen, Dr. Lucians E. Barrere and Miss Betty Towner of the Department of Ophthalmology aided in this study.
Read before the Section on Obstetrics and Gynecology at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 16, 1949.

1. Keettel, W. C., and Plass, E. D.: An Evaluation of Prophylactic Penicillin Administration to Parturient Women, to be published.

With this available experience, a continuing experiment was started July 19, 1948 and terminated April 10, 1949, the control and treated groups being selected to favor the former. The control series (group A) included all private and part-pay patients who were delivered by the senior staff and more experienced residents, while the treated series (group B) was made up of indigent patients delivered almost exclusively by senior medical students and interns. The delivery room technic and postpartum routine were the same. Only patients delivered abdominally and those who received penicillin therapeutically for some intercurrent condition were excluded.

Penicillin G [2] of the procaine type for injection in aqueous suspension was used. It was believed that this type would be ideal for prophylaxis because the penicillin is liberated slowly after intramuscular injection and the bacteriostatic effect is prolonged. An intramuscular injection of 600,000 units of procaine penicillin was given as soon as possible after the onset of labor, and 300,000 units were administered similarly twenty-four hours later, after delivery. Each dose was given as a single intramuscular injection. When labor was prolonged more than twenty-four hours the larger dose was repeated at twenty-four hour intervals until delivery. On the average the antepartum dose was administered four to six hours before delivery and the postpartum injection eighteen to twenty hours after delivery.

Antepartum cervical cultures were made on all patients in the treated groups, and conjunctival cultures were made of their babies at birth and again after twenty-four hours. With the permission of Walter L. Bierring, Commissioner of Health for the State of Iowa, no additional ophthalmic prophylaxis was given the children of mothers in the treated series. Under the same authority, babies in the control group had 1 drop of 1 per cent freshly (daily) prepared silver nitrate solution instilled into the right conjunctival sac, which was kept open with retractors for one minute, and approximately 0.1 Gm. of penicillin ointment (100,000 units of penicillin G per gram) placed in the left sac. The prophylactic applications were repeated three hours after birth. The Department of Ophthalmology conducted the bacteriologic study, which is the subject of a separate report by Allen and Barrere.[3]

2. The penicillin for the study was supplied by E. R. Squibb & Sons.

TABLE 1.—*Complications of Pregnancy and Labor*

Complication	Group A Control Series	Group B Penicillin Series
None	300	312
Placenta previa	1	2
Premature separation	5	4
Toxemia	6	24
Diabetes	1	2
Eclampsia	0	1
Syphilis	5	5
Pyelitis	0	2
Heart	1	3
Miscellaneous	12	20
Total	391*	393*
None	316	320
Postpartum hemorrhage	6	9
Prolonged second stage	44	37
Prolonged labor	4	8
Premature labor	13	20
Intrapartum fever	26	18
Prolapsed cord	3	2
Miscellaneous	3	4
Total	415*	427*

* Number is greater than total because of duplications.

TABLE 2.—*Method of Delivery*

	Group A Control Series	Group B Penicillin Series
Spontaneous delivery	289	287
Low forceps	89	65
Forceps rotation	14	13
Mid forceps	3	1
Spontaneous breech	4	13
Breech extraction	6	6
Version extraction	1	1
Total	396	386

In the second study being reported herein the control series (group A) totaled 391 women (396 children), and there were 382 women (386 children) in the treated series (group B).

There were 10 per cent more primigravidas in group A and a smaller incidence of women over 30 years of age. Group B had more grande multiparas, which probably explains the higher incidence of pregnancy complications, such as toxemia (table 1). Of the complications of labor, only prolonged second stage was more common in group A. The higher incidence of induction of labor by artificial rupture of the membranes in group B (26.1 per cent as against 10.2 per cent) entailed more vaginal examinations early in labor. The incidence of spontaneous deliveries (table 2) and of perineal repairs, and the types of analgesia and anesthesia did not differ significantly in the two series.

Oral temperatures were recorded every four hours during labor and the six to nine days of puerperal hospital stay, excluding 2 a. m. One day fevers persisted less than twenty-four hours; first day elevations of temperature were included. "Two or more day fevers" persisted for more than twenty-four hours, the first twenty-four hours after delivery being excluded. Fevers on two or more nonconsecutive days were included in this category. Any fever, irrespective of the duration of the elevation in temperature, during labor was listed as intrapartum fever. The lower limit of "fever" was 38 C., or 100.4 F.

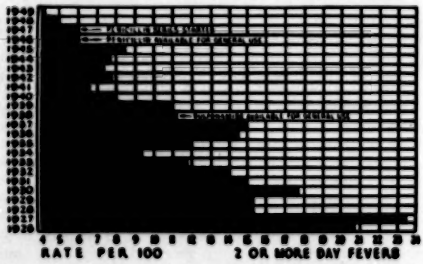
TABLE 3.—*All Puerperal Febrile Reactions*

	Group A Control Series	Group B Penicillin Series
Intrapartum Fevers	26	18
Afebrile	320	333
1 day fever	36	24
2 day fever	17	8
3 day fever	6	2
4 day fever	1	0
5 day fever	1	0
6 day fever	0	1
7 or more	0	0
Total	391	382

3. Allen, J. E., and Barrere, L. E.: Prophylaxis of Gonorrheal Ophthalmia of the Newborn: V. Comparison of Effectiveness of Penicillin and Silver Nitrate, J. A. M. A. 141:522 (Oct. 22) 1949.

From table 3 it is evident that all types of puerperal fever were more common in the control group, but that the most significant difference involved the "two or more day fevers," where the rate was 6.4 per cent in the controls as against 1.3 per cent in the treated series. Except in rare instances the fever was ascribed to endometritis because of the absence of signs of extrapelvic or localized extrauterine pelvic infection. Six patients in group A and 1 in group B were ill enough to justify therapeutic doses of the antibiotics and supportive treatment. There were no deaths in either series.

There were 3 stillbirths and 2 neonatal deaths in group A, as compared with 5 stillbirths and 4 neonatal deaths in group B, a total child mortality of 1.3 and 2.3 per cent, respectively. The stillbirths were attributable to toxemia (2), ablatio placentae (1), erythroblastosis (2) and congenital anomaly (1), with 2 unexplained by autopsy. The only full term neonatal death involved a hydrocephalic child (group B). The remaining neonatal deaths concerned premature children (birth weights 1,000, 1,600, 1,700, 1,680 and 2,295 Gm.). The largest premature child died follow-



Puerperal morbidity 1926 to 1949, Department of Obstetrics and Gynecology, University Hospital.

ing a surgical attempt to correct a congenital esophageal atresia with tracheoesophageal fistula.

Combined bacteriologic data from the two reports revealed 8 cases of gonococcic cervicitis, an incidence of 1.5 per cent, as compared to 4 per cent reported in 1939 from this clinic by Tucker.[4] The predominant organisms obtained from cervical cultures taken ten days before delivery were Streptococcus viridans (50 per cent), Staphylococcus aureus (37 per cent), Staphylococcus albus (26 per cent), Candida albicans (20 per cent) and beta-hemolytic streptococci (10 per cent).

Conjunctival cultures taken immediately after birth were sterile in 66 per cent of group A and 66.5 per cent of group B children. Gonococci were not recovered from any child. Gram-positive cocci were cultured from 31.5 per cent of group A as against 21.7 per cent of group B children, whereas the incidence of gram-negative bacteria was 1.9 per cent and 8.3 per cent, respectively.

Twenty-four hour conjunctival cultures from the right eyes (silver-nitrate-treated) of group A children showed no growth in 61.1 per cent; and those from the left eyes (penicillin-ointment instillation) were sterile in 71.4 per cent. This latter figure corresponds closely with the 73.3 per cent absence of growth in cultures from babies in whom indirect ophthalmic prophylaxis was attempted by maternal intrapartum penicillin injections. As in the immediate postnatal cultures, gram-positive cocci were significantly more common in children treated with silver nitrate.

Pronounced chemical conjunctivitis was present only in the eyes receiving silver nitrate. However, catarrhal conjunctivitis, inclusion blenorrhea and lacrimal duct obstruction were not influenced by the type of prophylaxis.

Procaine penicillin G in aqueous suspension proved more easily injected and produced less pain than the oil and wax preparation used in the earlier study. In addition the equipment was more easily and quickly cleaned. There was no abscess formation and only a single significant local inflammatory reaction. One patient had generalized urticaria eight days after the last injection.

COMMENT

One commonly accepted criterion for the effectiveness of obstetric, and especially parturient, care is the postpartum course of the body temperature. By international agreement early in this century, the puerpera was allowed a latitude of one degree Centigrade (1.8 degrees Fahrenheit) by reason of her curious position on the borderline of normality, and she was designated as febrile only when her temperature reached 38 C., or 100.4 F. By taking oral temperatures at four hour intervals even transient fevers became evident. It soon became apparent that fever during the twenty-four hours after delivery had no significance, and it became common practice to exclude such elevations from further consideration. Moreover, temperature elevations persisting for not more than twenty-four hours ordinarily appeared clinically unimportant, and emphasis was laid on fevers of more than one day's duration as presenting objective evidence of infection in the genital tract or elsewhere. In the absence of definite proof of an extragenital source, such infections were designated endometritis or, after appearance of an extrauterine pelvic focus, as infection of a specific pelvic structure.

It is generally agreed that the majority of puerperal pelvic infections are due to organisms introduced from without during or before labor, but that certain endogenous pathogens are responsible for some puerperal fevers. Over the years, continuing efforts have been made to protect the obstetric patient from the former by improvements in surgical technic, reduction of genital tract trauma, prompt repair of lacerations and antepartum care designed to improve the general health and to anticipate the development of serious disease complications. Under this plan, maternal morbidity in well regulated hospitals gradually declined. The introduction of blood banks and the more generous use of blood transfusions led to further improvement, and finally the antibiotics brought the morbidity rate to its present low point. The changing incidence of puerperal fevers observed at the University Hospitals is presented in the accompanying figure. The reduction in febrile postpartum morbidity is striking, changing from 20.8 per cent in 1926 to 4 per cent in the first few months of 1949, but our data suggest that routine penicillin prophylaxis to all patients will reduce the rate still further. Whether such prophylactic therapy will reduce

4. Tucker, W. W.; Trussell, R. E., and Plass, E. D.: Latent Gonorrhea in Obstetric Patients, Am. J. Obst. & Gynec. 38:1055-1060 (Dec.) 1939.

the number of fatal or extremely serious puerperal genital infections is equivocal, for these serious infections are now uncommon and the control series did not contain any. It may be that penicillin in the doses employed rendered the more susceptible exogenous and endogenous organisms innocuous.

In spite of the evidence here presented that large doses of penicillin administered prophylactically during labor will reduce the incidence of postpartum fevers of more than twenty-four hours' duration to as low a rate as has been reported, it seems questionable whether such prophylaxis should be made routine practice in the normal woman who can be expected to deliver herself without difficulty. Not only is such prophylaxis expensive, but there is questionable value in prevention of minor pelvic infections. And there is always the fear that reliance on such protection will lead to violation of the ordinary surgical principles essential to good obstetric practice. However, accumulating evidence indicates that, especially in prolonged labor, difficult operative delivery or certain antepartum complications, the administration of the antibiotics in addition to the usual supportive measures provides additional safety for mother and child. The further inference to be drawn from these data is that those conditions which provoke transient febrile responses in the puerperium are not susceptible to control by penicillin, and that use of the antibiotic is not necessary for their control. By contrast, fevers of longer duration appear to be largely on the basis of infections with susceptible organisms, so that therapeutic penicillin early in the course of the complication may be advisable.

This series is too small to permit evaluation of the effect of penicillin administration in the prevention of neonatal deaths from infection. However, the presence of therapeutic levels of the antibiotic in the amniotic fluid would suggest that the sequelae of severe amnionitis, such as intrauterine pneumonia and septicemia, may be materially reduced.

The results on neonatal ophthalmic prophylaxis with penicillin administered directly to the conjunctivas or indirectly through injections into the mother confirm the observations of others that this method is effective in preventing gonococcic ocular contamination but does not significantly alter the other conjunctival flora. There appears to be no good reason at present to discard the traditional use of weak silver nitrate solutions for this purpose, since the latter is inexpensive, easy to apply and effective when properly instilled. Moreover, the occasional case of gonococcic ophthalmia which may be expected with any type of routine prophylaxis can be effectively combated by intramuscular injections and local applications of penicillin, provided the diagnosis is established before the appearance of irreparable ocular damage.

CONCLUSIONS

The intramuscular administration of large doses of penicillin to parturient and early puerperal women does not significantly alter the incidence of intrapartum or one day fevers but does reduce the fevers of longer duration and greater clinical significance by approximately two thirds. There is probably no reason for prophylactic administration of penicillin to normal women, but the drug should be administered prophylactically to women with prolonged and difficult labors and to those potentially infected.

Penicillin applied in an ointment directly to the conjunctivas of the newborn infants or administered indirectly by intramuscular injections to the mother during labor is an effective ophthalmic prophylactic but is essentially no better than the traditional silver nitrate solution.

ABSTRACT OF DISCUSSION

DR. E. STEWART TAYLOR, Denver: This well organized and valuable experiment has provided information on two subjects: First, the effect of penicillin in reducing puerperal morbidity has been demonstrated; second, further information has been obtained regarding penicillin as a prophylactic measure against ophthalmia neonatorum. The febrile course has been reduced in the treated group. The medical students and interns on Dr. Plass' service, working with patients of low income levels, were with the help of prophylactic penicillin able to make a record in puerperal morbidity five times better than that of Dr. Plass' senior staff members. Postpartum cultures were not taken from the uteri of these patients. Had such cultures been taken we should have found anaerobic streptococci and other anaerobes present in most uteri of the untreated patients. Providing uterine drainage is adequate and the resistance of the host is not reduced the multitudes of anaerobic organisms usually do not produce puerperal infection. Prophylactic penicillin given during labor and during the early puerperium will usually render the uterine cavity bacteriologically sterile, providing drainage of lochia is adequate and there are no retained products of conception. In the ordinary uncomplicated bacteriologically clean labor patient prophylactic penicillin is not necessary. We make use of it prophylactically at the University of Colorado in obstetrics under the following conditions: (1) when labor is prolonged over twenty-four hours; (2) when membranes are ruptured longer than twenty-four hours; (3) in intrapartum fever; (4) when the parturient patient has an upper respiratory infection; (5) when valvular heart disease complicates pregnancy, as a measure to avoid postpartum bacterial endocarditis; (6) when cesarean section is done after ruptured membranes or any amount of labor; (7) after difficult forceps operation, version or manual removal of the placenta; (8) during the after-care of genital lacerations other than elective episiotomy, and (9) as a prophylactic against intrapartum infection of the fetus and fetal membranes in cases of early premature rupture of the membranes. Penicillin is not a panacea specific for intrauterine organisms that lead to neonatal sepsis of the fetus. The colon bacillus is a frequent offending organism in infections of the newborn. Penicillin is inert as a weapon against colon bacilli in the doses used herein. For this reason we believe that it is important to use sulfadiazine prophylactically with penicillin in cases of premature rupture of the membranes and in cases of threatened intrapartum infection. We have had no experience with penicillin as a prophylactic against ophthalmia neonatorum.

DR. LOUIS H. DOUGLAS, Baltimore: This paper by Dr. Keettel is a continuation of the original study on the same subject. By combining the figures in both papers, a sum is reached which is large enough to warrant drawing conclusions which are significant. The fairness and honesty of the essayist in presenting his subject is most refreshing. I find myself unable to disagree with his conclusions and his opinions. Especially am I in accord with his statement that the giving of penicillin routinely to every patient in labor is inadvisable. Not only are the reasons advanced true, but in addition it must be remembered that a small number of persons have either an acquired or an inherent idiosyncrasy to the drug and that a severe reaction may occur with a possibly disastrous effect on the baby. If the practice were to become universal it might well be that some clinics or persons would consider a dosage somewhat smaller than the recommended 900,000 to 1,200,000 units over a twenty-four hour interval to be sufficient. Would it not then be possible for organisms to become penicillin fast, so that the therapeutic value

of the drug would be lost if infection did later develop? The staphylococcus is particularly prone to exhibit this trait, the streptococcus less likely to. When the patient is exposed to infection or when it has developed there is a definite indication for penicillin, but in either instance full dosage should be employed. Among these indications may be included premature rupture of the membranes, either spontaneous or artificial, when labor does not promptly ensue; extensive uterine manipulations from below, prolonged labor and tests of labor. With increasing knowledge of roentgen pelvimetry, it is now decided to allow a certain number of patients to have a real test of labor, patients who a few years ago would have had an elective abdominal delivery or at the most a short trial labor and then a cesarean section. And in recent months there has been advocated in cases of moderate mid pelvic contraction not only a test of labor but also a "test of forceps." The forceps are applied and gentle traction made; if no advance occurs, the forceps are removed and the patient is delivered abdominally. Proponents of this procedure object to the term "failed forceps," preferring the aforementioned term, "test of forceps." Certainly neither of these two methods would be feasible or permissible were it not for the added protection of penicillin. Therefore it would appear to be proper to follow the recommendations of Dr. Keettel not to use penicillin in every case of labor but to reserve it for those in which it is indicated. And when penicillin is used it should be given in a dose sufficiently large to produce the desired result.

DR. WILLIAM C. KEETTEL, Iowa City: One point not mentioned in the paper was the larger number of complicated premature infants in the treated series because of more complicated cases. Despite this fact the premature salvage was much better than that in the control group. The number of cases is not large enough to be statistically significant, but if results in a larger series prove this to be true it certainly would be significant. Since the controlled experiment was discontinued, 90 indigent women have been delivered. In this group there have been 9 cases of two or more day fevers, which is twice as many as there were in the preceeding ten months. Still unanswered is the final question whether a puerperal patient is best treated by penicillin prophylaxis and an afebrile puerperal course, or whether there is harm in waiting the development of a febrile course and then treating the patient intensively. Since puerperal infections are so easily treated at present we are not recommending routine penicillin prophylaxis. However, in the future should the indirect approach prove the more desirable method of ophthalmic prophylaxis then routine penicillin prophylaxis can be justified.

Acute Appendicitis.—The present decade has witnessed a spectacular drop in the mortality rate of acute appendicitis. This is nationwide and is reflected in the reports of small institutions as well as those of large centers. There were 14,113 fatalities due to appendicitis in the United States in 1939, while in 1946 there were only 5,285. Commenting on this progress, the Metropolitan Life Insurance Company stated, "There is good reason to believe that within the next few years appendicitis will be reduced to a very minor cause of death in our country and that medical science and public health administration will close another important chapter in their history." That many factors are responsible for this improvement is illustrated by the divergence of surgical opinion on the role each has played. These tend to fall into four general headings: first, public health education with its resulting earlier seeking of treatment by patients; second, improved operative management with emphasis on the elimination of drains and greater use of the McBurney incision; third, the improved methods and agents in the field of preoperative and postoperative supportive therapy, and, fourth, sulfonamide compounds and antibiotics.—Louis R. Slattery, M.D.; S. A. Yannitelli, M.D., and J. Willian Hinton, M.D., Acute Appendicitis, *Archives of Surgery*, January 1950.

THE FEDERAL GOVERNMENT AND AMERICAN INDIANS' HEALTH

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The question whether the federal government has fulfilled its responsibility to the American Indian with respect to providing health facilities is best answered by the disease and death records among Indians, which, by comparison with similar records for the general population, speak for themselves.

To infer that progress has not been made over a period of years in the improvement of health conditions among American Indians would be far from correct. Much progress has been made, particularly since 1911 when the first specific appropriation, in the amount of $40,000 for that year, was allowed by Congress for health work among Indians. Increased recognition on the part of the federal government of its responsibility in providing health and hospital facilities for Indians has been reflected in lower specific death rates among Indians as increased appropriations have been made available from year to year.

To the time of writing, thirty-eight years after 1911, there are seventy-one hospitals (sixty-four in Continental United States and seven in Alaska) operated for the exclusive use of Indians, yet only limited preventive medical services have ever been provided. That funds appropriated for health services among Indians have been reasonably, effectively used is indicated by a decided reduction in specific death rates among the Indians, particularly from those diseases against which vaccination is effective, including typhoid, smallpox and diphtheria.

However, just as appropriations for preventive medical programs for Indians have not kept pace with federal, state and local appropriations for health facilities for the general population, the reductions in specific death rates among Indians have not kept pace with the spectacular reductions in specific death rates among white persons. The higher prevalence of disease among Indians in 1911 and 1949, except for those diseases which have been controlled through the use of vaccines and serums, is proportionately as great now as it was thirty-eight years ago.

For the protection of the health of the general population the community, the town or city, the county, the state, the federal government and private health organizations are equally interested in health conservation, and in many instances each contributes to its financial support. But many thousands of the Indians, through no fault of their own and because of the poor economic conditions under which they have existed since they were placed on reservations, continue to exist in some of the most arid and nonproductive areas of the country. They are without more than limited resources of their own and must depend almost entirely on the federal government for such health facilities as are provided. Insufficient funds to provide effective public health (preventive disease) services for Indians on all reservations or to adequately staff with professional personnel the seventy-one hospitals for which the federal government through the Bureau of Indian Affairs is responsible, is primarily the reason for the disgracefully high specific disease death rates that continue to prevail among Indians as compared to the death rates from the same diseases among the general population.

Director of Health Division, Bureau of Indian Affairs.

Tuberculosis among all age groups of Indians and intestinal infections, particularly among Indian infants and children, are excellent examples. These two diseases take a high toll of Indian lives each year. While deaths resulting from these and other controllable diseases vary slightly among different tribes of Indians, depending to a great extent on economic conditions, they are far out of line with what should be tolerated especially among a racial group a majority of whom are wards of an otherwise benevolent government. The death rates among Indians as submitted from the state of Montana for 1947 are, in general, about the same as those submitted from other states in which large groups of Indians reside. The death rates quoted herein are official. They are furnished by the departments of health of the states to which they refer or, where they apply to Tribes only, from the records of the Indian Agency having jurisdiction.

THE TUBERCULOSIS DEATH RATE

The tuberculosis death rate for the general population (the United States as a whole) in 1947 was 33.5 per 100,000. For Indians in Montana it was 244.4, a ratio of 7.6 deaths among Indians to 1 among white persons. Among the Navajos in 1947 it was 302.4 per 100,000 population, a ratio of about 9 to 1. In North Dakota in 1947 the tuberculosis death rate was 366 per 100,000, a ratio of about 10.9 deaths among Indians to 1 among the white population. These high tuberculosis death rates prevail among the Papagos of Arizona, among the natives of Alaska and among other tribes of smaller populations. Although complete information is not yet available for 1948 and 1949, sufficient statistical information has been received to indicate that the tuberculosis death rate among all the 400,000 Indians in continental United States and Alaska will average above 200 deaths per 100,000 population.

On an average, the country over, there exist approximately 9 cases of tuberculosis for each death which occurs. Our data from chest roentgen ray surveys already conducted among many tribes of Indians will support the ratio of a minimum of 9 cases of tuberculosis among Indians to each death which occurs. By conservative estimate, based on both the observations of the Bureau of Indian Affairs and the established nationwide ratio of cases to deaths, there are about 2,400 Indians in continental United States and Alaska who are suffering with active tuberculosis and are in need of hospitalization. To care for tuberculous patients the National Tuberculosis Association, the American Trudeau Society and the United States Public Health Service recommended a minimum of 2½ hospital beds for each death that occurs from that disease. Among the Indians, where the case load is extremely high, we need a minimum of 3 beds per annual death, or a total of about 2,400 beds to care for tuberculous Indians.

To accommodate tuberculous Indians the Indian Service maintains a total of 929 beds and contracts with other agencies for an additional 300 beds. The Indian Service has available, therefore, a total of 1,229 beds to accommodate a conservatively estimated minimum of 2,400 Indians with active tuberculosis. The other 1,170 tuberculous Indians, approximately 50 per cent of the total, for lack of hospital facilities to accommodate them or adequate field health services to teach them the dangers of the disease, are being permitted or compelled (many Indians for whom accommodations are not available would like to be admitted to hospitals) to wander at large among their own people, each a definite danger to those with whom he comes in contact. When one observes the living conditions of many thousands of Indians, crowded together as they are in one room, dirt floor hogans, in small tents or in shacks of primitive construction and without any modern sanitary facilities, one wonders with amazement why tuberculosis among American Indians is not many times more prevalent than it actually is.

Aside from the shortage of more than 1,100 hospital beds to accommodate Indians with active cases of tuberculosis, sufficient funds have not been made available by the federal government to permit full utilization of all beds available. In 1948, for lack of funds, only 60 per cent of the beds available for tuberculous Indians could be utilized. During the first half of the fiscal year of 1949, for which the information has been received from all six Indian Service sanatoriums and from sanatoriums operated by other agencies with which the Indian Service is contracting for the care of tuberculous patients, the total average case load was 592, or 337 short of their operating capacity.

From the Sioux Sanatorium, Sioux City, S. D., for lack of adequate operating funds, it was necessary to discharge, during the last half of the fiscal year 1949, 25 patients with tuberculosis whose treatment had not been completed. Of the 25 patients discharged, 17 had positive sputums at the last examination before they were discharged. In addition to those discharged 10 persons with newly diagnosed cases of tuberculosis found during the month of February 1949 who desired hospitalization at Sioux Sanatorium were advised that they could not be accepted until after the beginning of this fiscal year 1950, when funds would again be available. Early in the last half of the fiscal year 1949 it was likewise necessary to discharge from Ah-Gwah-Ching Sanatorium in Minnesota 12 patients whose treatment had not been completed. In every instance the six sanatoriums operated by the Indian Service in continental United States have had a waiting list of patients with active tuberculosis who could not be admitted either because of a lack of funds to operate through the year, or because of an insufficient number of beds to accommodate applicants for admission.

As in the case of other highly infectious diseases, the spread of tuberculosis can only be controlled by the isolation of the patients with active, sputum-positive infection from those who are susceptible to the disease but who have not yet contracted it. This is not being done and cannot be done among the American Indians for whom hospital accommodations are not provided by the Bureau of Indian Affairs and for whom funds are not available to expand the contractual service with non-government-operated sanatoriums.

As long as this condition prevails, the rate of tuberculosis infection among Indians will continue to be high and little progress will be made in controlling tuberculosis among Indians as a racial group.

INFANT MORTALITY

Along with tuberculosis, diseases of infants and children, with infantile diarrhea as the most important of this group, contribute greatly to the over-all high death rate among the Indians as a racial group. In Montana, a state in which the infant death rate (all causes) among the white population is one of the lowest in the nation, the infant death rate among Indians in 1948 was 116 per 1,000 children born as compared to 28 for the state

and 32 for the nation as a whole. As a specific disease infantile diarrhea killed 51 Indian children in Montana in 1948 per 1,000 children born as compared to 4.1 deaths per 1,000 children born in the state and 5.6 deaths per 1,000 children born in the general population. The ratio of deaths from this disease in Montana was therefore 14 times greater among Indians than among the general population.

Among the Navajos of Arizona and New Mexico the infant mortality rate per 1,000 children born was 191 and 227 for 1947 and 1948, respectively, as compared to 32 and 31 for the same years among the general population. This represents a ratio of 6 and 7 times more deaths among the Navajo Indians than among the general population of the country as a whole. In 1948 deaths of infants under 1 year of age among the Navajos from all causes accounted for 40.7 per cent of the total deaths occurring among those of all ages, and deaths of children under 5 years of age, from all causes, accounted for 55.7 per cent of the total deaths among all ages.

When one includes figures on the Papagos of Arizona, several of the tribes in the Dakotas and the natives of Alaska the infant mortality and tuberculosis death rates are equally as high as those among the Indians of Montana or among the Navajos of Arizona and New Mexico. The occurrence of typhoid among Indians as a racial group is more than 4 times greater than that among the general population. Trachoma, a readily controllable disease when the cases can be found and brought to treatment, is again increasing in several tribes of Indians for whom sufficient members of the field staff (nurses and eye specialists) are not available to locate, diagnose and treat this disease. The pneumonia morbidity and mortality rates among reservation Indians, probably because of poor housing conditions and exposure during the winter, is uniformly much higher among Indians than among the general population. The death rate from pneumonia among the different tribes of Indians varies widely according to the climatic conditions under which they live. For the tier of Northern states, where climatic conditions are most severe during the winter season, the pneumonia death rates among Indians in 1948 as compared to the rates among non-Indians in the same states were higher in Nebraska by 8 to 1, in South Dakota 3 to 1, in North Dakota 4 to 1, in Montana 5 to 1 and in Wyoming 17 to 1.

General sanitation, including housing facilities, sanitation of water used for domestic purposes, sewage and excreta disposal and food sanitation, has been neglected to an extent that the sanitary conditions under which many thousands of Indians live are nothing short of primitive and are unknown for any other group of persons in the United States.

APPROPRIATIONS AND PERSONNEL FOR INDIAN HEALTH SERVICES

From 1911 to 1940 year to year increases in appropriations for health services for Indians made possible fairly good progress in the reduction of death rates resulting from certain communicable diseases. During that period many hospitals were constructed, and availability of professional personnel (physicians and nursing personnel) made it possible to staff on a fairly adequate basis the hospitals that were provided for Indians. Since the beginning of World War II, however, neither appropriations for the proper maintenance and operation of hospitals nor those for providing needed field health (preventive medicine) services have kept pace with the greatly increased cost of maintaining and operating these services. In some instances hospital buildings, quarters for personnel and the maintenance and replacement of equipment have been neglected because of lack of funds to such an extent that even an average degree of efficiency cannot be maintained. Likewise, for lack of sufficient appropriations to compensate professional personnel on a basis comparable to salaries paid for medical officers by state and local governments and by other federal agencies, it has been impossible for the Bureau of Indian Affairs to recruit more than the minimum personnel required to keep the doors of many Indian hospitals open. With seventy-one hospitals varying in bed capacity from 15 to 337, and for the operation of which the Bureau of Indian Affairs is responsible, only 102 full time resident physicians were employed and on duty as of Oct. 1, 1949, an average of only a fraction more than 1 physician per hospital now accepting patients. As of October 1, four hospitals were operating without a resident medical officer in attendance and with only nurses in charge of the limited number of patients that can and must be accepted for such nursing care as the nurse can provide. Fifty hospitals varying in bed capacity from 15 to 60 beds were operating with only one resident physician in charge. Thirteen hospitals with bed capacity up to eighty beds were operating with only two resident physicians on duty, and the remaining four hospitals and sanatoriums varying in bed capacity from 80 to 337 beds were operating with more than 2 but not more than 7 physicians in charge.

Salaries for all physicians employed by the Indian Service must be kept to an irreducible minimum to stay within budgetary limitations, and this necessity is responsible to a great extent for the inability of the Bureau of Indian Affairs to compete with other agencies in the recruitment of medical personnel to be engaged in either hospital or field health services. Until funds are made available to permit the payment of salaries comparable to those paid by other agencies and an increase in the number of physicians from the 102 now employed to a total of approximately 250 needed to operate the seventy-one hospitals and an adequate field health service for which the Indian Service is responsible, the Indians of the country will continue to receive inadequate medical care.

In each of the fifty hospitals for which only one physician is provided at present, the physician in charge is on duty or on call twenty-four hours of each day for eleven months of the year (one month annual leave is allowed) with no opportunity for educational refresher courses and with little opportunity to attend professional conferences. In addition to being responsible for the care of patients admitted to these small hospitals the one physician in charge is in most instances also responsible for such outpatient clinic service and for such field health services as are provided.

Extreme difficulty has been encountered in recruiting nurses urgently needed to fill hospital staff vacancies and field (public health) nursing positions. As of Sept. 1, 1949 there were 123 vacancies of a total of 835 hospital nursing positions allowed to operate the seventy-one hospitals for which the Bureau of Indian Affairs is responsible. The shortage of staff nurses has in a few instances necessitated the closing of hos-

pital wards and in many other instances has necessitated the utilization of nonnursing personnel to give care to patients.

A field nursing program has been the only public health (preventive medicine) service provided by the Indian Service. However, of 125 public health nurses needed for field work only 104 positions are allowed under budgetary allotments for the fiscal year 1950, and as of Sept. 1, 1949 only 69 positions were filled to provide nursing service for Indians in the states and Alaska. This shortage of public health nurses has left many Indian Reservations without any public health nursing service and in many instances has increased the areas served by presently employed nurses to the extent that efficient service cannot be given.

Despite the shortage of professional personnel to provide adequate medical care and public health facilities for the Indians, there are related conditions which make the improvement of the health of the Indians, at least among some tribes, a doubly difficult task. There are many Indians in continental United States who neither speak nor understand the English language. To converse with them it is necessary that the public health nurse or other health worker, whose responsibility it is to teach the Indians the dangers of disease and how to prevent it, must be accompanied by an interpreter who can speak the language of the people.

It cannot be said that the Indians are responsible for this deplorable situation. According to Mr. W. W. Beatty, Director of Education of the Bureau of Indian Affairs, there are approximately 15,000 Indian children of school age on the Navajo Reservation alone (Arizona and New Mexico) for whom there are no classroom accommodations available in the government-operated Indian schools. Therefore, there is no opportunity for these Indian children to obtain even a primary school education. Many of these children live in extremely isolated areas and come in contact only with their own people, who speak in tribal language. They do not so much as have an opportunity to hear the English language spoken.

Similar conditions to a less aggravated degree may be found on the Papago Reservation, where a little over half of the children of school age are attending school; on the Arizona Apache Reservation, where a substantial number of children are out of school, and in remote parts of Alaska, where there are about 2,000 children who do not have access to schools. Until these conditions can be corrected and a basic primary education for Indian children has made English a common language of oral exchange, so that it will be possible to communicate with these Indians through the medium of the printed page, work in health education will be seriously handicapped.

It is a lasting tribute to the physicians and nurses of the Indian Service, who have given so unstintingly of their time and efforts to render the best service possible under the most trying circumstances, that the Indian Health and Hospital Service has not completely broken down during these recent years when there has been an unnecessary shortage of funds for the efficient operation of hospitals and a corresponding necessary shortage of personnel to render adequate service.

Although public health (preventive medicine) service has long since been recognized as a most important, if not the most important, part of any over-all community health program, the consistent lack throughout the history of the Bureau of Indian Affairs of any organized public health (preventive medicine) program for the Indians is a situation which national pride should never have tolerated throughout all the years since the Indians were conquered and placed on lands that the white man thought he would never need. When the Indians were made wards of the government many years ago, a majority of them were placed on reservations in some of the most arid and nonproductive areas of the entire country. Their economic status, for which they cannot be held responsible, has compelled them to continue to be dependent on the government—a government which has contributed liberally to the promotion of the health of the general population, including all other racial groups in our country, and even to the improvement of health conditions in many foreign countries, yet has consistently neglected to provide equally adequate health (and educational) facilities for this group of people who by decree of their conquerors have been permitted or required to live in squalor and as a disease-ridden racial group for more than a hundred years. No matter what the cost, until the disgracefully high death rates among the Indians of America are brought more closely in line with death rates among the general population, there can be but one answer to the question, "Has the federal government fulfilled its responsibility to the American Indian with respect to providing needed health facilities"?—The answer is "No."

MYCOBACTERIUM TUBERCULOSIS IN UTERINE DISCHARGE

Detection by Cultures: Diagnostic and Prognostic Value in Latent Female Genital Tuberculosis

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Hadera, Israel

In a preliminary communication[1] I reported the first results of our studies concerning the detection of latent female genital tuberculosis by cultures of menstrual discharges made on a specific medium (Petragnani). We had used this method especially for women who had been sterile for many years and in whom the usual methods for detecting the cause of sterility had failed or for women who showed partial or complete nonpatency of the fallopian tubes when tested by repeated insufflation and/or salpingography. In some cases we used cultures of the menstrual discharges to verify the diagnosis of endometrial tuberculosis made by endometrial biopsy. The results obtained with this method encouraged us to continue our studies in this field and to extend the use of this method to systematic investigations of the intermenstrual cervicouterine discharges. This is a report of further results of our studies in this field. In our research we had a threefold task: (1) to diagnose latent female genital tuberculosis, especially in cases of primary sterility, (2) to verify the diagnosis (and determine the prognosis) of endometrial tuberculosis made by endometrial biopsy and (3) to discover to what degree a patient who discharges tubercle bacilli from the vagina can infect persons in her immediate surroundings.

From the Maternity Hospital, Hadera.
All bacteriologic studies were made at the laboratories of the Kupath Holim in Tel Aviv and Haifa. Dr. E. L. Bregman and Dr. Hirsch, directors of these laboratories, and Professor Klopstock gave valuable assistance.

1. Halbrecht, I.: Detection of Latent Genital Tuberculosis by Cultures of Menstrual Discharge, Lancet 2:947, 1947.

DIAGNOSTIC VALUE OF CULTURES OF UTERINE DISCHARGE

Cultures of Menstrual Discharge.—Material: The patients whose menstrual discharge we examined were divided into three groups. Group 1 consisted of 16 patients in whom we had already diagnosed endometrial tuberculosis by endometrial biopsy. The 84 patients who comprised group 2 had been under observation for several years because of primary sterility; endometrial biopsy in these cases had shown no particular pathologic change. However, several of these women were suspected of having genital tuberculosis, the opinion being based on the fact, established by repeated insufflation or salpingography, that the fallopian tubes were occluded. Group 3 consisted of 30 healthy, fertile women whose menstrual discharge was used for control tests.

Technic: The menstrual discharge was collected mainly on the second day of menstruation through a vaginal speculum into a solution of 2 cc. of isotonic sodium chloride or sodium citrate. The specific medium (Petragnani) was inoculated the same day, after the blood coagulum, the mucus and all other tissue were carefully dissolved. We made a special effort to compress the cervix between the two blades of the speculum in order to obtain as much uterine material as possible.

TABLE 1.—*Total Results of Cultures Made for Tubercle Bacilli*

	Cultures of Menstrual Secretions			Cultures of Intermenstrual Cervicouterine Secretions		
	Positive	Negative	Total	Positive	Negative	Total
Group 1	12	48	60	2	40	42
Group 2	5	282	287	1	69	70
Group 3	..	30	30	..	30	30

This procedure was repeated as a rule only once during the same menstrual period, on the day when the discharge was most copious. We tried to repeat the examination of the menstrual discharge in the same woman as frequently as possible; in 1 case we made thirteen examinations during one year.

Microscopic studies of these secretions before inoculation of the mediums and after staining (Ziehl-Neelsen) showed no tubercle bacilli in any of the cases. We used the medium suggested by Petragnani as being specific for Mycobacterium tuberculosis. Some of the cultures showed acid-fast bacilli which could be easily differentiated from Myco. tuberculosis by the form of their colonies as well as by their microscopic structure.

In 5 cases we proved the nonpathogenicity of these bacilli by inoculating guinea pigs with the cultures. In 8 other cases we established the identity of the Myco. tuberculosis that grew on the cultures of menstrual secretion from 8 different women by inoculating guinea pigs.

Analysis of Results (Table 1): Sixty cultures of the menstrual discharge of the 16 patients (group 1) in whom we had previously diagnosed endometrial tuberculosis by endometrial biopsy showed the following results: 12 cultures from 6 patients were positive for Myco. tuberculosis; 48 cultures were negative, and in only 6 of the 16 cases was the diagnosis of genital tuberculosis established by biopsy verified by the cultures (table 2).

Of 287 cultures of the menstrual discharge of the 84 women with primary sterility in group 2, 5 showed Myco. tuberculosis. This is especially remarkable since the endometrial biopsies in all 84 cases showed no tubercle bacilli (table 3).

The cultures of the discharge from the 30 healthy and fertile women in group 3 were negative.

Comment: A little more than one third of the diagnoses of genital tuberculosis, established by other means,

TABLE 2.—*Results of Cultures in Sixteen Cases in Which Endometrial Biopsy Had Revealed Tubercle Bacilli*

Case Number	Cultures of Menstrual Secretions			Cultures of Intermenstrual Cervicouterine Secretions		
	Positive	Negative	Total	Positive	Negative	Total
1	4	1	5	..	6	6
2	..	1	1	..	..	..
3	..	2	2	..	1	1
4	..	1	1	..	1	1
5	3	3	5	..	6	6
6	..	13	13	..	1	1
7	..	2	2	..	2	2
8	..	6	6	..	5	5
9	..	5	5	..	..	..
10	..	1	1	..	2	2
11	1	1	2	..	..	..
12	..	1	1	..	..	..
13	..	1	1	..	..	..
14	3	3	5	..	..	..
15	3	1	3	..	4	4
16	1	6	7	..	..	..
Total	12	48	60	0	30	30

were verified by cultures of menstrual discharge. On the other hand, we detected genital tuberculosis in 5 cases by employing only cultures. In these 5 cases endometrial biopsy showed a normal mucosa without any traces of tuberculosis.

There can be no doubt that the number of positive observations increases proportionately with the frequency of examination. In some cases we obtained positive results only after the third or fourth examination, but we could make more than two studies on the same woman in only 50 per cent of the cases (table 2).

The absence of danger to the patient and the possibility of repeating the studies as frequently as desired, in order to establish the diagnosis, enhance the value of the method still more in comparison with endometrial biopsy, which is not free from danger, particularly in cases of genital tuberculosis. Negative results do not preclude the existence of genital tuberculosis, just as negative results in sputum examinations do not preclude the possibility of pulmonary tuberculosis. The finding of tubercle bacilli in sputum, as in menstrual secretion, depends on the location of the disease, the stage of progression and the path of invasion.

TABLE 3.—*Results of Cultures in Five Cases in Which Endometrial Biopsy Had Revealed No Tubercle Bacilli*

Case Number	Cultures of Menstrual Secretions			Cultures of Intermenstrual Cervicouterine Secretions		
	Positive	Negative	Total	Positive	Negative	Total
1	1	1	2	..	4	4
2	1	3	4	..	5	5
3	1	2	3	..	3	3
4	1	..	1	1	2	3
5	1	3	4	..	1	1
Total	5	9	14	1	15	16

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Cultures of Intermenstrual Cervicouterine Discharges.—Material: Unlike the cultures of menstrual discharge, which have a better chance of success but which cannot be repeated more than once or twice during one cycle, the cultures of intermenstrual discharge offer the advantage of possible daily repetition.

In certain cases of primary or secondary amenorrhea, which is not rare in persons with genital tuberculosis, the mucous secretion from the cervix is the only material available for cultures.

Technic: With a cotton-tipped applicator about 25 cm. long, we tried to penetrate as far as possible into the cervical canal, in order to obtain as much secretion as possible. In cases in which the cervical canal was tightly closed, we tried to collect the secretion from the immediate surroundings of the external os. The collected material was then inoculated on Petragnani mediums.

Analysis of Results: The patients were divided into three groups, according to the principles used in the analysis of cultures of menstrual discharge.

In the 16 cases of genital tuberculosis diagnosed prior to these studies (group 1), all 30 cultures prepared from the intermenstrual cervicouterine discharge were negative. In 2 similar cases, in which we could obtain only the cervical secretion because of amenorrhea, the diagnosis of genital tuberculosis was verified by the cultures.

In the group of primarily sterile women in whom the diagnosis of genital tuberculosis had not been made previously (group 2), 70 cultures showed only 1 positive result.

All 30 cultures from the 30 healthy women in group 3 were negative.

Conclusions: Whereas 17 of 287 cultures of menstrual discharge were positive (about 6 per cent), only 3 of 112 cultures of intermenstrual cervical secretion were positive (less than 3 per cent), indicating that the diagnostic value of the former is far superior to that of the latter. It cannot be doubted, however, that cultures of the cervical secretions have a relative value.

PROGNOSTIC VALUE OF SYSTEMATICALLY REPEATED CULTURES

So far, we could establish only the fact that some women with genital tuberculosis discharge Myco. tuberculosis in their menstrual secretion more frequently than do others equally afflicted. This may be explained by the differences in extent of involvement, location and anatomicopathologic form of the genital tuberculosis.

The experience we gained from these studies is not yet sufficient to permit us to draw definite conclusions as to the prognosis of genital tuberculosis in women. Further research in this field will, we hope, serve to shed more light on this point.

CONTAGION

Since some of the women with genital tuberculosis discharge Myco. tuberculosis in their menstrual and probably in their intermenstrual cervical secretions, the question of whether or not this tuberculosis of the woman is transferable to the sexual organs of her husband is justified. We could not find a single case of transfer of tuberculosis from the woman to her husband in any of the 60 cases of endometrial tuberculosis or in any of the cases in which the discharge, menstrual as well as intermenstrual, contained Myco. tuberculosis. We even inoculated spermia of six of the husbands on specific mediums in order to exclude any latent genital tuberculosis of the husband. All cultures were negative. Thus, it may be assumed that these women do not represent any danger to those in their surroundings. Nevertheless, we thought it advisable to suggest to these women that they take precautionary measures against spreading the tuberculosis.

SUMMARY

1. Sixty cultures of the menstrual discharge of 16 women, in whom endometrial biopsy had established the diagnosis of endometrial tuberculosis, were made on Petragnani mediums; 12 of these cultures showed Mycobacterium tuberculosis.

2. Five, in 5 different women, of 287 cultures of menstrual discharge from primarily sterile women, in whom endometrial biopsy had shown no sign of genital tuberculosis, were positive for tuberculosis.

3. Three of 112 cultures of intermenstrual discharges from primarily sterile women showed Myco. tuberculosis.

Council on Foods and Nutrition

ENERGY REQUIREMENTS OF ADULTS

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This paper was prepared at the request of the Council and is one of a series appearing in THE JOURNAL. *In the near future the entire series will appear in book form as the Council's Handbook of Nutrition.*

JAMES R. WILSON, M.D., *Secretary.*

For the past decade or so the central importance of calories in the diet has been obscured by the phenomenal developments in other aspects of nutritional science. This tendency is documented by the leading textbooks. The space accorded to energy, calory estimation and requirements, including the problems of obesity and emaciation, is only 11 per cent of the text in such standard works as Sherman's [1] and McLester's [2] books and 9 per cent in the work by Hawley and Maurer-Mast.[3] Such works expound general principles and some illustrations but do not critically examine the problems of actual practice. Moreover, while there is a spate of review articles and treatises on other aspects of nutrition, monographs on calories and energy requirements appear infrequently and usually begin with a semiapologetic or defensive statement: "There is a danger that energy requirements may be regarded as of minor importance . . . but . . . energy requirements will always be of interest" [4]; "Calories in medical practice are just as important as they ever were." [5] It appears, however, that the pendulum of interest is now beginning to return toward the older problems of calories. The hard lessons of the recent war included many demonstrations that, on a varied diet, the problem of "quality" is apt to be secondary to quantity. For the world as a whole, the foremost food problem continues to be a shortage of calories. On the other hand,

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1. Sherman, H. C.: Chemistry of Food and Nutrition, ed. 7, New York, The Macmillan Company, 1946.
2. McLester, J. S.: Nutrition and Diet in Health and Disease, ed. 5, Philadelphia, W. B. Saunders Company, 1949.
3. Hawley, E. E., and Maurer-Mast, E. E.: The Fundamentals of Nutrition, Springfield, Ill., Charles C Thomas, Publisher, 1940.
4. Orr, J. B., and Leitch, I.: The Determination of the Calorie Requirements of Man, Nutrition Abstr. & Rev. 7:509, 1938.
5. DuBois, E. F., and Chambers, W. H.: Calories in Medical Practice, in Handbook of Nutrition, Chicago, American Medical Association, 1943, chap. 4, pp. 55-69.

in a few favored areas like the United States, the opinion is developing that the most serious nutritional fault may be overeating.[6] In a simpler world, without the disturbing factors of processed and otherwise disguised foods, of the social pressures associated with eating and the frequent substitution of food concepts in personal psychodynamics, man might more uniformly strike an ideal balance between caloric intake and requirements, always assuming that an abundance of food is at hand. But man is by no means such a perfect animal in an ideal state of nature. Moreover, though the appetite is remarkably accurate, it may fail to adjust to the altered situations in disease. In any case it is clear that the individual often needs guidance about his caloric intake.

These questions about caloric requirements take their simplest form at the point of caloric balance, that is where the energy intake precisely balances the outgo. Unfortunately, a large proportion of the actual problems which have to do with calories are more complex. The most obvious complications have to do with growth and changes in body weight. In the United States nearly a third of the population is made up of persons who are still growing and whose energy intake should exceed the output so as to allow for growth; in many areas (e. g., the Far East) half the population may be in this category. Even with adults the establishment of exact caloric balance may not be the immediate problem in nutritional therapy. In medical practice the question of calories usually arises in connection with problems of losing or gaining weight.

UNITS OF MEASUREMENT

In medicine the customary unit of energy is the large calory or kilocalory, which in some literature is distinguished from the small calory of the chemist by an initial capital for the former. It is precisely defined as the amount of heat which will raise the temperature of a kilogram of water 1 degree, from 15 to 16 C. In an ideal engine 1 calory would do 426.9 Kg.-M. (or 3,087 foot pounds) of work. The dissipation of heat at the rate of 1 calory per minute in a perfect engine is equivalent to doing work at a rate of 0.0936 horse power (1 H.P.—33,000 foot pounds per minute), or, in electrical units, is equal to 69.77 watts. The calory, then, can be used as a measure of mechanical or electrical work as well as for heat.

When food is burned in the body the resulting energy may appear entirely as heat or partly as external work, from which, in turn, heat may be derived. In any case, the energy result is substantially the same as though the food were actually burned outside the body. Both inside and outside the body this combustion uses oxygen and produces carbon dioxide in proportion to the fuel used, but the exact proportion depends on whether carbohydrate, fat or protein is burned. For the latter the residual nitrogen resulting from combustion (urinary nitrogen) may be measured to estimate the amount of protein combusted. One gram of urinary nitrogen results from the combustion of about 6.25 Gm. of protein, which is associated with the release of 26.5 calories, the use of 8.45 Gm. of oxygen and the production of 9.35 Gm. of carbon dioxide. If only protein were being metabolized, it would be possible to calculate the calories involved by any one of three measurements: (1) urinary nitrogen, (2) oxygen consumption and (3) carbon dioxide production.

But ordinary metabolism always involves fat and carbohydrate as well as protein. Fortunately, for each of the three sources of food energy the consumption of 1 liter of oxygen corresponds to much the same energy release, roughly 5 calories. This allows the use of the ordinary metabolism machine, in which only oxygen use is measured, for all but the most precise estimations of energy expenditure. Such measurements, however, do not indicate the proportions of the three nutrients which are being used. For this it is necessary, in the system of indirect calorimetry, to measure the urinary nitrogen and the carbon dioxide production as well as the oxygen used. After allowing for the protein metabolized, the proportion of fat to carbohydrate is indicated by the respiratory quotient, since pure carbohydrate has an R. Q. (volume of carbon dioxide divided by volume of oxygen) of 1.0, while for pure fat the R. Q. is about 0.73. The details may be examined in various textbooks (e. g. see ref. 11 below); the important point is that these indirect means can be used to get accurate values for the current level of energy use and the nutrients providing that energy.

In terms of energy the body makes little or no distinction between fuels taken into the body and the substance of the body itself. If the energy expenditure exceeds the energy intake, the substance of the body itself is used to make up the deficit. If the intake is excessive, on the other hand, the bodily substance increases accordingly. In either case the change of bodily substance primarily involves fat and glycogen, although homeostatic mechanisms tend to preserve the latter from total depletion on the one hand and unlimited storage on the other. The bodily protein is relatively insensitive to the caloric balance except when a negative balance is continued (starvation); then it, too, is burned in increasing proportion as the reserves of fat and glycogen dwindle. Fortunately, the body is disinclined to change its mass of substance and normally a disbalance between energy intake and outgo tends to be automatically corrected by the appetite.

Finally, it should be observed that the body customarily uses food completely. With ordinary foods 95 per cent or more of the potential energy is extracted; the energy value of the excreta is only of the order of 5 per cent that of the diet. This fact, together with the facts already noted, means that there are several alternative ways of estimating the energy balance and needs of the body. These are discussed in subsequent sections of this article.

MEANING OF CALORIC REQUIREMENT

The term "caloric requirement" is widely used without clear definition. Obviously, the qestion must be answered: Requirement for what?[7] The simplest definition is to consider the caloric requirement as that intake which will just balance the current energy expenditure. This definition has several limitations in actual practice if requirement is to be construed as a prescription to achieve and maintain an ideal state of nutrition in regard to calories. "In the first place, the energy expenditure tends to reflect, within limits, the calory intake. The underfed organism conserves its expenditure, partly by a decline in basal metabolism and, more important perhaps, by a reduction in voluntary activity. And the overfed organism increases its mass, thereby increasing the energy cost of all its movements. In the second place, to consider the requirement as

6. A Study of Impairments Found Among 10,000 Unselected Examinees: II. Weight, editorial, Proc. Life Ext. Exam. 3:89, 1939. Rynearson, E. H., and Gastineau, C. F.: Obesity, Springfield, Ill., Charles C Thomas, Publisher, 1949.

7. Keys, A.: The Calorie Requirement of the Adult, Nutrition Abstr. & Rev. 19:1, 1949.

simply the caloric balance point supposes the existing body mass to be ideal; the provision of the balance requirement then would perpetuate whatever fault of emaciation or obesity may be present." [7]

It would seem desirable, or even essential, to differentiate between three kinds of requirements: (1) the simple balance requirement of a person in his current state, (2) the ideal requirement and (3) the therapeutic requirement. The first of these is straightforward; the energy expenditure at any given time may be estimated with considerable precision. The ideal requirement, however, is a theoretical concept; it would correspond to the energy expenditure of a person of ideal weight for height who is maintaining an optimal activity level for his occupation and environment. Finally, the therapeutic requirement is that intake which is calculated to rectify a fault of body weight or tissue mass; when this correction is achieved, it is replaced by either the ideal or the balance requirement.

Most discussions about caloric requirements are devoted to the "ideal requirement," although this is not always so specified. Tables of caloric requirements or recommendations are almost all of the "ideal requirement" type, but they uniformly ignore many of the factors which certainly influence the ideal requirement. Among these may be mentioned age, physical environment, clothing and shelter, recreational custom and habitual tempo of movement.

VARIETIES OF CALORIC EXPENDITURE

All textbooks on nutrition and biochemistry summarize the varieties of caloric expenditure and indicate how the total expenditure may be estimated as the sum of the energy losses associated with basal metabolism, specific dynamic action and physical activity. This last item, physical activity, is the most troublesome and, being both large and highly variable, is the prime reason why the factorial method of estimating caloric requirements often leads to erroneous conclusions. An excellent summary of the factorial method is given by Orr and Leitch [8]; elsewhere, I have indicated some of the difficulties.[9]

Basal Metabolism.—All indirect estimates of the total energy expenditure by the factorial method begin with the basal metabolism. The obligatory least energy expenditure of the body in the resting state must certainly be the first portion of the total caloric demand to be covered. But, as Krogh [9] pointed out long ago, the basal metabolism as customarily measured is not really the basal, that is least resting, metabolism; the rate is considerably less than this in sleep and somewhat less in ideal repose in the waking state. The excellent basal metabolism standards of the Mayo Clinic [10] overestimate the true basal metabolism by something like 10 per cent.[7] However, the customary measurement of basal metabolism is undoubtedly a good index of the true basal rate and the numerical error is sufficiently systematic to permit its use, with correction, in calculations for total metabolism.

A most important virtue of the basal metabolism is the fact that, in normal persons, it is subject to so little individual variation. This means that in many cases the actual measurement may be dispensed with and the basal metabolic rate can be estimated, within an error of perhaps plus or minus 10 per cent, from tables like those compiled by the Mayo Clinic. For individual patients, however, the individual measurement should be made if there is the least question about the complete normality of the basal metabolism. In normal persons, including the majority of persons who are habitually underweight or overweight, the mean true basal metabolic rate for men ranges from about 40 calories per square meter of body surface per hour at age 20 to about 35 calories at age 60; the corresponding values for women are about 35 and 31 calories.[11] This means that for adults of average size the basal metabolism accounts for something like 1,600 calories per day in young men to perhaps 1,100 calories in older women. Gross departures from these values are found in the presence of thyroid disturbances and in semistarvation. In famine victims and patients with anorexia nervosa the total basal metabolism may be 40 per cent below the normal level for age and height [12]; the subnormality of the basal metabolism in undernourished persons is less pronounced when calculated per unit of surface area of the body.

There is extensive literature on the relation of basal metabolism to race and to climate. The racial factor may be dismissed here on the ground that if it does exist—and this is a matter of controversy—it is relatively trivial. The effect of climate is discussed separately below.

Specific Dynamic Action.—The basal metabolic rate can be maintained as such for only a few hours at a time; the resting metabolic rate is altered either by the changes associated with beginning starvation or those incident to the ingestion of food. The latter, under the heading specific dynamic action, are discussed in an extensive and often confusing literature. The ingestion of a meal raises the resting metabolism to an extent which is variable, depending on the character and size of the meal.[13] While estimates of the percentage of the total metabolizable energy of meals which appears as specific dynamic action vary from around 6 [14] to 17 [13b] per cent, there can be no great error in assuming a general average of 10 per cent for all ordinary mixed diets. This energy is "lost" as heat and, presumably, is a pure waste in warm climates; in cold climates the heat of specific dynamic action may be a valuable adjunct in the maintenance of body temperature.

Physical (Muscular) Activity.—The energy cost of physical activity includes perhaps a third to as much as 80 per cent of the total caloric expenditure. Even the bed-fast patient indulges in many movements in addition to those of the respiratory muscles. Moreover, the absence of gross movement is no guarantee

8. Keys,[7] The Refinement of Metabolic Calculations For Nutritional Purposes and the Problem of "Availability," editorial review, J. Nutrition **29**: 81, 1945.

9. Krogh, A.: The Respiratory Exchange of Animals and Man, New York, Longmans, Green & Co., 1916.

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11. DuBois, E. F.: Basal Metabolism in Health and Disease, ed. 3, Philadelphia, Lea & Febiger, 1936, pp. 145-188.

12. (*a*) Keys, A.: Caloric Undernutrition and Starvation with Notes on Protein Deficiency, J. A. M. A. **138**: 500, 1948. (*b*) Beattie, J., and Herbert, P. H.: The Estimation of Metabolic Rate in the Starvation State, Brit. J. Nutrition **1**: 185, 1948. (*c*) Basal Metabolism During Recovery from Severe Undernutrition, Brit. J. Nutrition **1**: 192, 1948. (*d*) Keys, A.; Brozek, J.; Henschel, A.; Mickelsen, O., and Taylor, H. L.: The Biology of Human Starvation, Minneapolis, University of Minnesota Press, to be published.

13. (*a*) Wachholder, K., and Franz, H.: Die spezifisch-dynamische Stoffwechselsteigerung bei gemischter Kost, Pflüger's Arch. f. d. ges. Physiol. **247**: 632, 1944. (*b*) Glickman, N.; Mitchell, H. H.; Lambert, E. H., and Keeton, R. W.: The Total Specific Dynamic Action of High-Protein and High-Carbohydrate Diets on Human Subjects, J. Nutrition **36**: 41, 1948.

14. Benedict, F. G., and Carpenter, T. M.: Food Ingestion and Energy Transformations With Special Reference to the Stimulating Effects of Nutrients, Carnegie Institute of Washington, Publication no. 361, 1918.

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of muscular relaxation; static work, in which movement is opposed by an external object or by antagonistic muscles, may involve relatively high rates of energy expenditure. In the heaviest forms of manual labor and sports, where the total daily expenditure may range upward from 5,000 calories, the cost of physical activity completely dominates the metabolic picture.

There are available numerous tables which purport to indicate the metabolic cost of different occupations and forms of activity. These have some interest in that they indicate, for example, the broad differences between clerks and carpenters and the relative costs of sitting and standing. But the fact is that the variations in the way in which different persons work at the same job and the changing nature of work in modern technology make metabolic classifications by occupation extremely crude.[7] Moreover, in the United States an increasingly large proportion of workers are not classifiable in the older, more uniform crafts and trades. Finally, the reduction in the hours of the work week and the substitution of mechanical for muscular force in almost all types of work means that often enough the metabolic cost of physical activity outside working hours in sports, hobbies and avocations is more important than that on the job. Such categories as "desk worker," "farmer," and "housewife" have little or no significance for predicting energy needs without much more detailed specification.

Body Size.—The body size is of major importance with regard to both basal metabolism and the cost of muscular activity. Although the basal metabolic rate is customarily considered as related to the body surface, a direct relation to the body mass (weight) is evident. If the body weight is raised to the power 0.7, it becomes closely proportional to the basal metabolism.[15] The energy cost of moving the body (or its parts) is directly proportional to the weight of the body (or the parts concerned), so that in many types of physical activity, such as walking, the energy expenditure is simply proportional to the body weight.[16] In some tasks, however, the energy cost of the physical activity has little relation to the body weight; these are primarily tasks in which it is necessary to exert large forces with little bodily movement. The exact relation between body size and total metabolism must depend on the activity habitus, but, in general, it is probable that the simplest approximation would be: Cal.=AW^n, where A is a numerical constant, W is the body weight and n is something between 0.7 and 1.0.

Climate.—The effective external temperature, that is, with due allowance for humidity and air movement as well as dry bulb air temperature, influences the energy expenditure in several ways. The general tendencies are clear and have been amply demonstrated by observation and experiment.[17] Under hot conditions the activity tends to be curtailed to keep the body temperature within normal limits, while cold has the reverse effect. Shivering in the cold may raise the resting metabolism by 50 or even 100 per cent. In addition to the effect on the activity, differences in the effective temperature, when long maintained, tend to alter the basal metabolism so that lower basal rates occur in the tropics.[18] Recent studies on United States and Canadian troops on active duty in different climates suggest that for these men balance was attained according to the equation: Cal. per day—4660—15.9 T, where T is the mean external temperature (Fahrenheit).[19] It should be observed that this relation pertains to very active young men who were, essentially, "camping out"; less climatic effect would be expected when the activity component is a smaller fraction of the total metabolism and when less time is spent out of doors. For ordinary population groups in the United States it could be suggested that an allowance of perhaps 3 per cent of the total metabolism should be provided for each 10 degrees difference in the mean external temperature. This would mean that if the caloric requirement at 70 F. is 3,000 calories, at 40 F. and 90 F. it would be, respectively, something like 3,270 and 2,820 calories. The true average effect may be greater or less than suggested here, but it seems certain that climate may not be overlooked in setting up caloric standards. For persons living largely indoors the effect may be small, but for persons working and living much in the open the effect is of real importance.

TABLES OF REQUIREMENTS AND RECOMMENDATIONS

Almost since the first recognition of the fact that people do have energy requirements which are most appropriately expressed in calories, there has been a constant stream of tables and charts to afford guidance in practical dietetics. The best known of these is currently the "Recommended Dietary Allowances" of the National Research Council,[20] which, in the United States at least, has superseded the older standards of the League of Nations.[21] In general these tables have been devised to aid in organization of the feeding of population groups and in evaluating their food supplies. With almost no exception, the orienting philosophy behind them has been to emphasize the frequency and danger of undernutrition and to promote an abundance of food supplies. In practice such tables have been widely adopted as a short-cut means of estimating nutritional status, so applied that intakes less than the suggested standards are labeled deficient, that is, "bad," and all other intakes, even though excessive, are accepted as sufficient and "good."

Whatever may be the virtues of these tables for large population groups, they are necessarily of little value for individuals or for small groups, which may not be representative of the entire population. Even for large population groups such tables are not properly used as dietary prescriptions to achieve the *best* nutritional state in view of their bias in favor of insuring enough without regard to the possibility of too much. These tables have been compiled largely by theoretical calculations from laboratory experiments with relatively few data from long time studies on caloric intake and actual nutritional status of people as they normally live. As we shall see, nutritional surveys indicate that the tabular standards are often

15. Kleiber, M.: Body Size and Metabolic Rate, Physiol. Rev. **27**: 511, 1947. Galvão, P. E.: Human Heat Production in Relation to Body Weight and Body Surface, J. Applied Physiol. **1**: 385 and 393, 1948.

16. Erickson, L. E.; Simonson, E.; Taylor, H. L.; Alexander, H., and Keys, A.: The Energy Cost of Horizontal and Grade Walking on the Motor-Driven Treadmill, Am. J. Physiol. **146**: 391, 1945.

17. Keys,[7] Keys, Brozek, Henschel, Mickelsen and Taylor,[12a] chap. 17.

18. Eaton, A. G.: Basal Metabolic Rate of Normal Individuals in New Orleans, J. Lab. Clin. Med. **24**: 1235, 1939. Macgregor, R. G. S., and Lah, G. L.: The Influence of a Tropical Environment Upon the Basal Metabolism, Pulse Rate and Blood Pressure in Europeans, J. Physiol. **99**: 469, 1941. Ames, A., and Goldthwaite, D. A.: Influence of Cold Climate on Basal Metabolism, United States Department of Army, Office Quarter Master General, Environmental Protection Series, Report no. 136.

19. Keys,[7] Johnson, R. E., and Kark, R. M.: Environment and Food Intake in Man, Science **106**: 378, 1947.

20. Recommended Dietary Allowances, Revised 1948, National Research Council Reprint and Circular Series no. 129, Washington, D. C., 1948.

21. League of Nations Technical Commission: The Problem of Nutrition, vol. 2, Report on the Physiological Bases of Nutrition, Official Report A12 (a), II B, 1936.

too high, and the detailed data from such surveys disclose individual variations of large magnitude. Besides a systematic tendency to overestimate actual caloric requirements, these tables oversimplify the questions by ignoring differences in climate, in local activity customs and in age of adults.

Caloric Intake in Surveys.—Theoretically at least, the mean caloric intake of a population group, clinically judged to be "well nourished," should be a useful estimate of the caloric requirement for the group. This method was, in fact, crudely applied to form the basis for some of the first estimates of normal human requirements. In more recent years, however, food intake surveys have been largely used to "prove" the existence of various dietary deficiencies by showing that food intakes often fail to equal or surpass one or another arbitrary standard. It is instructive, however, to point out that many recent surveys have been coupled with physical examinations of the persons concerned with the result that they provide data on the caloric intakes of persons who are clinically well nourished and are leading lives normal to their area and sphere of life. Almost without exception these data indicate that such standards as the National Research Council "Recommended Dietary Allowances"[20] would provide overgenerously in the case of calories. Discrepancies are particularly large in the case of women and for all older persons. The survey findings, some of which are indicated below, lead inevitably to one of the following conclusions: (1) The survey data are all systematically in error and substantially underestimate actual caloric intake, or (2) a great many persons are habitually calorically starved even in the absence of any limitation in money or available food supplies, but this semistarvation is not clinically discernible, or (3) the caloric "requirements" and recommendations used as standards are too high.

Significant data are beginning to be available for normal men and women whose activities may be described as "sedentary," "physically active" (men) or "moderatively active" (women). These are the lowest and the middle of the three activity (metabolic) levels distinguished by the National Research Council and many other authorities. It is generally agreed that, in a large population group, the middle metabolic level, "moderately active," corresponds roughly with the mean metabolic level of the entire adult population.

The National Research Council recommendations are 2,000 and 2,400 calories, respectively, for "sedentary" and "moderately active" women. In comparison, survey findings on the actual caloric intakes of non-emaciated normal women may be noted: 1,930 calories in Toronto families,[22] 1,452 calories for American women of low and moderate income in the United States,[23] 2,039 calories for moderately active college women in the United States,[24] 1,577 calories for white women and 1,443 calories for Negro women in North Carolina,[25] 1,797 calories for active Michigan women over 40 years of age,[26] 1,690 calories for obese college girls in Michigan,[26] 2,187 and 2,137 calories for different groups of middle class English women[27] and 1,424 calories for active old women in England.[28]

Survey data on men indicate a like discrepancy between apparent caloric intake and recommended values.[29] Various technic—weighing, questioning and homely measures (by cups and the like)—have been used in the several surveys cited, but they all tend to yield similar values and, in fact, are in agreement with each other when simultaneously applied.[30] It might be suggested, however, that all these methods underestimate calories in the intake. Recent painstaking studies, on the contrary, showed that all these methods may yield data in good agreement but give a considerable overestimate for calories.[31]

In other words, there is certainly no evidence or valid argument that the caloric intake data from surveys are generally or even frequently underestimates. Since clinical undernutrition with regard to calories was not characteristic of the persons studied in these surveys, it must be concluded that the recorded caloric intakes were, at least on the average, equal to the caloric expenditures. It follows that, if such intakes fail to equal certain standards or recommendations, then the fault is with the standards and recommendations, which must be, indeed, overestimates of the requirements.

The sole remaining alternative to this last conclusion would involve the idea that a person who is clinically well nourished may, when given an increased caloric intake, expend that extra food energy on useful work without any change in his net body mass. While underweight persons will often do more work when given more food,[15a] we know of no instance in which the body weight does not also respond simultaneously. In the well nourished person there is no evidence that an increased caloric intake is accompanied by an equally increased level of physical activity. The converse sequence is, of course, well established; an increased level of physical activity leads to a corresponding increase in food intake if food supplies are available.

CALORIC NUTRITIONAL STATUS

It is certain that the continued consumption of less food than corresponds to the caloric expenditure must lead to relative emaciation and an excessive intake must lead to obesity. For short periods these tendencies may be obscured by abnormalities in the hydration of the body, but, in the absence of other disease, neither dehydration nor edema can long disguise the progressive effects of continued caloric imbalance.[32]

Obviously, then, a changing body weight may permit an accurate inference about the caloric balance and, roughly, the alteration of intake needed to correct this. But what if, as is more often the case, the body weight is not changing? Caloric balance may be achieved at widely differing levels of body weight, and these involve correspondingly different levels of energy intake and expenditure. A fat man needs much food

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25. Milam, D. F.: A Nutrition Survey of a Small North Carolina Community, Am. J. Pub. Health 32: 406, 1942.
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30. Widdowson, E. M., and McCance, R. A.: Food Tables: Their Scope and Limitations, Lancet 244: 230-232, 1943.
31. Bransby, E. R.; Daubney, C. G., and King, J.: Comparison of Results Obtained by Different Methods of Individual Dietary Survey, Brit. J. Nutrition 2: 89, 1948.
32. Newburgh, L. H.: Obesity, Arch. Int. Med. 70: 1033, 1942.

to maintain caloric balance because he is heavy; every movement is energetically more expensive because of the greater mass of the body and its parts which must be moved. The guide for the person whose weight is stable must be in the actual mass and composition of his body. Any substantial departure from the ideal in these respects indicates the departure of the average previous food intake from the ideal.

As a first approximation we may take the gross body weight and compare it with some standard. The body weight standards given in all textbooks are, in fact, merely the arithmetical averages of the body weight of apparently "normal" persons of specified age, sex and height.[33] As such they indicate popular trends but do not necessarily indicate "ideal" weights. For the latter it is suggested, with support from insurance mortality experience, that the ideal weight is lower than the actual normal average for all persons over 30 years of age.[34] Another question is how to allow for differences in skeletal ("frame") size. It is agreed that this is of importance and that a person of "small" frame should weigh perhaps 5 per cent less than a person of "medium" frame of the same height, age and sex; an extra 5 per cent is suggested for the person of "large" frame.[34] As yet there are no agreed criteria for frame classification.

In the absence of quantitative tools the clinical judgment of the state of caloric nutrition is made on the basis of appearance and manual appraisal of the muscular development and the subcutaneous fat deposits. There is no reason to suggest that this method is not, actually, both useful and fairly reliable.[35] In effect, it attempts to estimate the body composition with emphasis on the relation of fat to other tissues.

With any reasonable definition, the inadequacy, sufficiency or excess of the previous diet should be reflected in the relative fat content of the body. The principal difficulty with the usual clinical method, besides the lack of numerical expression, is that the subcutaneous fat may not always be an accurate index of the total fat of the body. With the development of caliper methods for measuring the thickness of the skin,[36] quantitative expression becomes possible and measures of this kind have already had some use in appraising the nutritional status of children.[37] Roentgenographic methods for the same purpose are also being developed.[38] The potentialities for the estimation of total bodily fat from the gross body density seem particularly promising, at least for research.[39]

As yet, critical analyses and proper standards for the use of these indirect methods are inadequate for general application in nutritional work; an intensive program at the Laboratory of Physiological Hygiene is aimed to improve this situation. Though major reliance in the meantime must be placed on simple height-weight data, the value and even necessity of a clinical appraisal must not be neglected. An extremely inactive person, that is, one with a greatly subnormal muscle mass, may actually be obese ("fat") even though he has a body weight which is normal or even somewhat subnormal for his height. On the other hand, the devotee of athletics, in spite of a normal body weight may be undesirably lean; he may need more food to achieve a reasonable fat mass in his body. Clinical examination should readily disclose the peculiarity in these cases.

THE PHYSICIAN'S TASK

The physician's task in regard to the caloric requirements of his patients is manifold and, in many cases, complicated. It is not unfair to suggest that, more often than not, it is shirked or incompletely done. There are good reasons for this—lack of instruction in the medical schools, poverty of textbook discussion and deficiencies in data from research—but these do not remove the responsibility which autonatically falls on every consultant. Besides the gross cases of emaciation and obesity which may be the presenting complaint, lesser degrees of abnormality which properly call for attempts at correction are present in a large proportion of all patients.

The starting point must always be the evaluation of the caloric status at the time. Is the patient fat or thin? It is better to answer this question than to decide whether there is overweight or underweight according to the chart. At the same time the presence of any abnormality of hydration should be considered, since this may confuse the issue of fatness or leanness. Occult edema is troublesome, since it may represent a sizable part—up to around 10 per cent—of the mass of the body in undernourished persons;[40] the thin skin and absence of fat pads in the usual places (abdomen, buttocks) usually reveal the true state. Recent changes in body mass should be discovered from the history and the way in which the clothes fit.

After the actual nutritional state has been evaluated, the decision must be made as to whether it should be changed and, if so, how. Perhaps it is desirable to keep the diabetic patient thin and the tuberculous patient fat. Perhaps a good psychologic state in a patient can be maintained only with a generous caloric intake, and perhaps this is more important than the extra hazard of circulatory disorder in the obese. Such points arise, but decisions must be made. The basic requirements for the subsequent caloric prescription are simple, but effective application may be extremely difficult because of the patient's attitude or complicating disease. Except in hyperthyroid patients, it is seldom wise to attempt the alteration of caloric balance by changing the energy output; it is far easier and surer to adjust the intake. In the great majority of cases, patience and a clear understanding of the elementary facts of nutrition will suffice to bring success.

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Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

The Council has authorized publication of the following reports.

OFFICE OF THE SECRETARY.

ANNUAL MEETING OF THE COUNCIL ON PHARMACY AND CHEMISTRY

The Council convened on Monday and Tuesday, Nov. 21-22, 1949 at the headquarters of the American Medical Association. All members except two were present. There also were present visitors and consultants who were interested in some of the Council's problems.

Drs. Torald Sollmann and James P. Leake were reelected chairman and vice chairman, respectively.

A representative of a firm making available an important drug, which is available only for research, requested the Council's advice concerning the distribution of such material. The Council expressed the opinion that a scarce but important drug could be, and in some instances should be, allocated to institutions and individuals equipped to do the necessary detailed studies and to competent men in their respective fields until sufficient information is obtained to warrant general release of such products to the public through the medical profession or otherwise. The Council also stated the belief that consideration should be given to permitting physicians to have access to such a drug for their patients through the specified institutions.

The Council discussed the use of antihistaminics for the prevention of colds and the treatment of those ill with colds. After examination of available evidence, published and unpublished, the Council concluded that available evidence did not justify the current widespread promotional efforts for the use of antihistaminics for the prevention and treatment of colds. The Council warned that experience was not sufficient to permit determination of the possible harmful effects following long-continued use of the antihistaminics and that certain dangers were now known to be associated with their use; for example, drowsiness has been known to occur, which could introduce a dangerous factor for persons working with machinery and driving cars. The Council also recognized that such drugs probably would be taken in many instances in excess of the prescribed dose, which would increase the possibilities of harmful effect.

Several manufacturers and/or distributors of products accepted by the Council for inclusion in New and Nonofficial Remedies had made claims for the use of the antihistaminics in the prevention and treatment of colds without prior approval by the Council. The Council voted to inform such manufacturers that these products would be deleted from New and Nonofficial Remedies unless the advertising was immediately corrected. The Council also voted to prepare a statement on the status of antihistaminics for publication in THE JOURNAL.

The present status of antimalarials, particularly the newer ones, was reviewed. Of particular interest to the Council were the drugs that are known to be curative and those which are excessively toxic.

The use of volunteers in state institutions for experimental investigations was discussed. Such experiments pose unique problems but, on the other hand, provide excellent opportunities for well controlled experiments.

Reconsideration was given to the action taken by the Council at its meeting in November 1948 concerning the omission of mixtures of typhoid and paratyphoid vaccines from New and Nonofficial Remedies. After reviewing available evidence, the Council concluded that the usefulness of such vaccines was not sufficient to warrant readmission to the book. In further consideration of typhoid vaccines the Council voted to reduce the dose recommended in New and Nonofficial Remedies by one half and to inform the manufacturers of this action.

Because of reports reaching the Council concerning the incidence of nervous manifestations and sequelae from the use of pertussis vaccines, the Council voted to insert the following statement in the New and Nonofficial Remedies' description of pertussis vaccine:

"Encephalopathic symptoms occasionally occur with whooping cough and, more rarely, with the use of the prophylactic vaccine. Such severe symptoms of the central nervous system have included convulsions and lethargy. They may be followed by mental or physical manifestations, sometimes permanent, or even by death."

The Council also voted to publish a request in THE JOURNAL to report to the Council office instances of serious reactions following the administration of pertussis vaccine and to gain from as many sources as possible information on this subject. The Council recognized that the average quality of vaccines on the market has been improved and may be improved further. It therefore expressed the belief that careful study should be given to reports of reactions.

The Council voted to include serums, vaccines and arsenicals in its list of products that are exempted from Council consideration when they have been official for twenty or more years. This exemption applies only if the other rules of the Council are met.

The status of the Therapeutic Trials Committee and ways of implementing and extending the work of this Committee were discussed. Several reports under the Committee's auspices already have appeared in THE JOURNAL. A comprehensive study is being made by a special subcommittee appointed by the Council to explore the full possibilities of the Therapeutic Trials Committee.

A resolution of the Section on Anesthesiology of the American Medical Association, which was referred to the Council by the Board of Trustees, was concerned with the development of data on deaths in operating rooms and the relation of anesthesia to these deaths. The Council believed that valuable data could be collected and voted to support in principle the gathering of the data, although the Council was aware that certain agencies already are making a study which will provide information on operating room deaths and the relation of anesthesia to these deaths.

Because of the increasing instances of sensitization to penicillin preparations for local application, the Council voted that penicillin preparations marketed as liquids, ointments and ophthalmic ointments be considered unacceptable for inclusion in New and Nonofficial Remedies, that all such preparations currently accepted be omitted from the 1951 edition of New and Nonofficial Remedies and that there be inserted in the appropriate N. N. R. monograph a warning concerning the danger of sensitivity following the topical application of penicillin products.

Because some manufacturers and/or distributors who present data to the Council have stated that the data are acceptable to government agencies and therefore should be acceptable to the Council, the Council voted that such manufacturers and/or distributors should be informed that, while these data may be acceptable to regulatory agencies, they are not necessarily acceptable to the Council, as the Council is interested in safety and efficacy and must consider the data on the basis of its rules. The Council also drew attention to the fact that data on a product can be sent to the Council at the same time they are submitted to the Food and Drug Administration, provided the product is soon to be placed on the market.

The status of penicillin inhalation therapy was discussed, and the Council voted to instruct its Secretary to investigate the occurrence of reactions of sensitivity associated with the use of penicillin in aerosols, inhalators and similar means of administration.

The present status of organomercurial preparations was reviewed.

A report was submitted on behalf of the Council's standing Committee on Therapeutic Research, and attention was drawn to the considerable assistance that is provided for many useful projects through the modest grants made available by this Committee.

A report from the Joint Committee on Pesticides was rendered to the Council, and it was recommended that an expression of appreciation be extended to the members of the Joint

Committee on Pesticides for their help in reviewing problems for the Council. It was also voted to appoint a permanent committee on pesticides and similar agents, to initiate the preparation of a series of informative articles for the medical profession and to undertake the preparation of a special publication in which information would be found on pesticides, their formulas, the purposes for which they are employed and the medical aspects of their use.

The status of the Knott Hemo-Irradiator was considered by the Council, which concluded that a report should be prepared for publication under Council auspices. This device, which utilizes a technic that exposes the blood of a patient to irradiation, has been suggested for the treatment of a variety of diseases and for the irradiation of plasma for small blood banks. The Council concluded that there was not sufficient valid evidence to support the use of this technic in killing virus and other bacteria when plasma or blood is so irradiated.

The Council discussed the status of drugs that do not provide material advantages over those that are already accepted for inclusion in New and Nonofficial Remedies. It was concluded that the rules permit individual consideration of each drug under question.

For some years the Council has accepted pyridoxine hydrochloride for inclusion in New and Nonofficial Remedies. This drug was accepted for experimental purposes; claims have not been recognized. Now there are indications that the substance may have an important metabolic function, and a report on the possible usefulness of pyridoxine will be issued soon by the Council.

Consideration of pyridoxine raised the question of whether the Council should accept drugs for experimental use. It was concluded that a product should have demonstrated clinical usefulness before the Council accepts it and that the products in New and Nonofficial Remedies should be confined to those for which claims can be advanced and proved.

After discussion of over-the-counter sale of penicillin, the Council voted to declare that it is not in the public interest to release penicillin for over-the-counter sale. The reasons for the Council stand have been set forth in a letter which has been forwarded to the Commissioner of Foods and Drugs.

The Council accepts mixtures of two or more drugs which are present in fixed proportions. The specific conditions under which mixtures may be accepted will be incorporated in the Council's rules.

CURRENT STATUS OF ADRENAL AND PITUITARY HORMONES (CORTISONE AND ACTH) IN THE TREATMENT OF ARTHRITIS AND OTHER DISEASES

Recently the daily press has contained numerous references to the treatment of rheumatoid arthritis and certain other diseases by the injection of an adrenal cortical hormone (cortisone, Kendall's Compound E, 17-hydroxy-11-dehydrocorticosterone) or by the adrenocorticotropic hormone of the anterior pituitary (ACTH), which stimulates secretion by the adrenal cortex.

The use of these preparations was first tried in 1948 by Hench and his associates at the Mayo Clinic. They reported a dramatic reduction in stiffness and pain and improvement of muscular and joint function in 14 patients.[1] The well known observation that rheumatoid arthritis is often improved after pregnancy, jaundice, general anesthesia or surgical treatment indicated that the disease could be influenced by phenomena which are primarily biochemical. The fact that the latter two procedures are known to stimulate the adrenal cortex prompted the Mayo workers to investigate the clinical efficacy of the aforementioned adrenal cortex and adrenal-cortex-stimulating preparations.

Cortisone is one of at least 28 steroids that have been isolated in crystalline form from the adrenal cortex. This compound can be synthesized from the bile product, desoxycholic acid, but the method of preparation is long and the yield is small. Certain other materials, such as the steroids obtained from the African vine, strophanthus sarmentosus or from the *Mexican yam, Dioscorea*, may eventually be usable as starting points in the synthesis. Much work remains to be done before either of these possibilities can be fully evaluated. Other steroids and mixtures of steroids from the adrenal cortex, as well as certain synthetic substances structurally similar to cortisone, are being investigated in a number of clinics.

The pituitary adrenal corticotropic hormone (ACTH) is now under investigation in 56 clinics, where 45 diseases are being studied. It is not a pure chemical compound, and different lots appear to vary in biologic action. ACTH does, however, afford a powerful tool for penetrating experiments on the basic mechanisms of diseases which are favorably influenced by its administration. At the present time ACTH is prepared from hog pituitaries, the concentration in beef and sheep pituitaries being relatively low. The yield even from hog pituitary is small, each patient requiring the daily administration of the amount obtained from approximately 100 glands.

As is not uncommon when powerful new agents are discovered, the immediate value of these substances is overemphasized in the popular press. While it has been shown beyond doubt that cortisone and ACTH often provide prompt and dramatic relief in arthritis, gout, lupus erythematosus, myasthenia gravis and other diseases, the improvement usually is maintained only as long as the administration of the drug is continued. Although chronic toxicity studies are far from complete, it has already been established that the continuous administration of either preparation over a long period often cannot be tolerated. At the present time, these preparations are available only in certain clinics where complete metabolic studies can be undertaken and the maximum use made of the limited quantities of the materials. The patients are selected only after they understand fully the dangers involved. When the administration of these drugs is discontinued there may be a rebound effect, the initial symptoms of the disease recurring with even greater severity than before.[2]

Another hazard in the use of either cortisone or ACTH is the general pituitary-adrenal disturbance which occurs during prolonged administration or with a relatively high dosage schedule. The rapidly developing clinical picture closely resembles that known as Cushing's syndrome. The picture is probably reversible if the administration of the drug is discontinued promptly on the appearance of these symptoms. The disturbance of pituitary-adrenal function is perhaps more readily seen with the use of cortisone, since it tends to inhibit the activity of both glands, while ACTH stimulates the adrenal. ACTH appears to have a depressant effect on the insulin-producing cells of the pancreas when used in high doses or for long periods,[3] an effect which has been used to control non-Addisonian hypoglycemia in children.[4] Although the experiments to date have been extremely cautious ones, there is some evidence that continued administration of ACTH might result in irreversible diabetes mellitus, of a high insulin-resistant type. Hypertension has been also noted in persons treated with ACTH. Both agents have been responsible for the development of psychotic states and pigment deposition resembling that seen in Addison's disease.[5]

ACTH and cortisone were originally distributed to qualified investigators without charge, the former by the Armour Laboratories and the latter through a committee of the National Academy of Sciences. Since Jan. 1, 1950 Merck & Co. has assumed responsibility for distribution of cortisone. While both companies are continuing the policy of distribution to qualified

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2. Boland, E. W., and Headley, N. E.: Effects of Cortisone Acetate on Rheumatoid Arthritis, J. A. M. A. 141:301-308 (Oct. 1) 1949.

3. Conn, J. W.; Louis, L. H., and Wheeler, C. E.: Production of Temporary Diabetes Mellitus in Man with Pituitary Adrenocorticotrophic Hormone: Relation to Uric Acid Metabolism, J. Lab. & Clin. Med. 33:651-661 (June) 1948.

4. McQuarrie, I.; Bauer, E. G.; Ziegler, M. R., and Wright, W. S.: Effects of Pituitary Adrenocorticotropic Hormone (ACTH) in Children with Non-Addisonian Hypoglycemia, Proc. Soc. Exper. Biol. & Med. 71:555-559 (Aug.) 1949.

5. Thorn, G. W., and others: Studies on the Relation Pituitary Adrenal Function to Rheumatic Disease, New England J. Med. 241:529-536 (Oct. 6) 1949.

investigators, a charge is now being made for supplies of the drugs furnished.

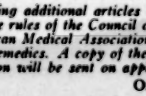
In the present state of our knowledge it would be extremely undesirable to permit the widespread use of these potent preparations in the routine practice of medicine, and it is perhaps fortunate that neither drug is now available in unlimited quantities. Because of the limited amounts of both drugs presently available, their use must be restricted to those instances where they will aid in the understanding of the mechanism of a disorder.

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

OFFICE OF THE SECRETARY.

LIDOCAINE HYDROCHLORIDE.—Xylocaine Hydrochloride (ASTRA).—The hydrochloride of diethylamino-2,6-acetoxylidide.—$C_{14}H_{22}N_2O.HCl$.—M.W. 270.79.—Lidocaine hydrochloride is prepared in solution by the action of hydrochloric acid with lidocaine. The structural formula of lidocaine hydrochloride may be represented as follows:



Actions and Uses.—Injection of lidocaine hydrochloride, a potent local anesthetic agent, produces more prompt, intense and extensive anesthesia than an equal concentration of procaine hydrochloride. Its anesthetic potency and the area of anesthesia are approximately twice those of procaine hydrochloride. At a concentration of 0.5 per cent, the toxicity of lidocaine hydrochloride in mice is the same as that of procaine hydrochloride, but as the concentration is increased, its toxicity exceeds that of procaine hydrochloride: at 1.0 per cent, it is 40 per cent greater; at 2.0 per cent, 50 per cent greater. It is compatible with epinephrine hydrochloride, with which it may be combined, to delay absorption, prolong its action and reduce its toxic effects. It is also used without epinephrine when vasodepressor drugs are contraindicated. Systemic side reactions and local irritant effects are rare. Nausea and vomiting, muscular twitching and chilling have been observed.

Lidocaine hydrochloride is useful for infiltration and block anesthesia in dental as well as general surgical procedures. It has been employed for topical or surface anesthesia, but the evidence to support such use is insufficient. It has been employed for continuous caudal, peridural and spinal (subarachnoid) anesthesia with promising results, but until its toxic potentialities have been compared with those of longer established agents, such as procaine and tetracaine, it should be used only for the less hazardous low caudal anesthesia. Lidocaine hydrochloride provides adequate anesthesia by these routes with a lower dose and with less fall in blood pressure than occurs with the better known agents.

Dosage.—Lidocaine hydrochloride is injected according to the type of local anesthesia to be induced. The maximum dose is the same as for procaine hydrochloride, i. e., 0.5 Gm. in 24 hours. When employed without epinephrine, as in patients who are hypersensitive to that substance, the maximum dose should be avoided and dosage reduced as much as possible. Solutions of half the strength of those used in procaine anesthesia should provide equivalent anesthetic potency. It should be remembered that solutions containing more than 0.5 per cent of lidocaine hydrochloride are more toxic than similar concentrations of procaine hydrochloride.

For infiltration anesthesia the 0.5 per cent concentration with epinephrine hydrochloride 1:100,000 is ordinarily used, the volume injected depending on the extent of the area to be anesthetized. In minor surgery 2 cc. to 50 cc. of this solution is usually adequate, but in major surgery, up to 100 cc. may be required. If larger amounts (up to 200 cc.) are injected, as in thoracoplasty, a solution should be 0.25 per cent. For block anesthesia a 1.0 or 2.0 per cent concentration with epinephrine hydrochloride 1:100,000 is used, depending on the site and structures concerned. The 2.0 per cent concentration without epinephrine is suitable for block anesthesia of the digits. A 2.0 per cent solution with epinephrine 1:50,000 is used for certain odontologic procedures.

Tests and Standards.—

LIDOCAINE. — α-Diethylamino-2,6-acetoxylidide. — $C_{14}H_{22}N_2O$. —M.W. 234.33.—

Physical Properties: Lidocaine is a white, crystalline solid possessing a characteristic odor. It is practically insoluble in water, very soluble in alcohol and chloroform, and freely soluble in benzene and ether. It melts between 66 and 69 C.

Identity Tests: To 0.1 Gm. of lidocaine dissolved in 1 ml. of alcohol add 10 drops of cobaltous chloride T.S. Shake the solution for about 2 minutes: a bright green color and a fine precipitate develop.

To a hot solution of 0.1 Gm. of lidocaine in 15 ml. of alcohol add 3 ml. of a hot saturated alcoholic solution of picric acid. Cool, filter off the crystals and recrystallize from hot alcohol. Dry in a vacuum desiccator for 6 hours. The crystals melt between 231 and 232 C.

Purity Tests: Dissolve 0.2 Gm. of lidocaine in 2 ml. of diluted hydrochloric acid and 25 ml. of water. Saturate the solution with hydrogen sulfide: no color or precipitate develops (*absence of heavy metals*). Dissolve about 0.2 Gm. of lidocaine in 2 ml. of diluted nitric acid and 20 ml. of water. To half of the solution add 1 ml. of silver nitrate T.S.: no opalescence develops (*absence of halides*). To the second half of the acid solution add 1 ml. of barium nitrate T.S.: no turbidity develops (*absence of sulfate*).

Dry 0.5 Gm. of lidocaine, accurately weighed, in a vacuum over calcium chloride for 24 hours: the loss in weight does not exceed 0.5 per cent.

Ash about 0.5 Gm. of lidocaine, accurately weighed: the residue does not exceed 0.1 per cent.

Assay: Dissolve about 0.5 Gm. of lidocaine, accurately weighed, in 40 ml. of 0.1 *N* sulfuric acid. Titrate to a red violet color with 0.1 *N* sodium hydroxide using 3 parts of 0.1 per cent alcoholic bromocresol blue and 1 part of 0.2 per cent alcoholic methyl red as indicator. Each ml. of 0.1 *N* sulfuric acid is equivalent to 0.02343 Gm. of lidocaine. The lidocaine content is not less than 99 nor more than 101 per cent.

0.5 PER CENT LIDOCAINE HYDROCHLORIDE SOLUTION: Pipet 10 ml. of the solution into an extraction flask. Add 1 ml. of 2 *N* ammonium hydroxide and extract with four 20 ml. portions of chloroform. Evaporate the chloroform extracts nearly to dryness, add 25 ml. of 0.01 *N* sulfuric acid and evaporate the rest of the chloroform. Titrate the residue with 0.01 *N* sodium hydroxide to a red violet color using the mixed indicator described under "Assay" in the monograph on Lidocaine. Each ml. of 0.01 *N* sulfuric acid is equivalent to 0.002708 Gm. of lidocaine hydrochloride.

2 PER CENT LIDOCAINE HYDROCHLORIDE SOLUTION: Analyze in the manner described for the 0.5 per cent solution using 20 ml. of the solution, 1 ml. of 5 *N* ammonium hydroxide, four 30 ml. portions of chloroform and 25 ml. of 0.1 *N* sulfuric acid. Titrate with 0.1 *N* sodium hydroxide. Each ml. of 0.1 *N* sulfuric acid is equivalent to 0.02708 Gm. of lidocaine hydrochloride. The lidocaine hydorchloride content is not less than 95 nor more than 105 per cent of the labeled amount.

LIDOCAINE HYDROCHLORIDE EPINEPHRINE SOLUTIONS: For the assay of lidocaine hydrochloride use the procedure described under Lidocaine Hydrochloride Solutions. For the assay of epinephrine, use the method of J. R. Doty (*Anal. Chem.* **20**: 1166 (1948)), adding 20 mg. of sodium bisulfite to each 10 ml. sample of solution. After the addition of the buffer solution, extract the precipitated lidocaine with petroleum ether, centrifuge to separate the two solvents and pipet out a sample from the bottom layer for spectrophotometric measurement. The lidocaine hydrochloride content should not be less than 95 nor more than 105 per cent of the labeled amount.

ASTRA PHARMACEUTICAL PRODUCTS, INC., NEW YORK 22, N. Y.

Solution Xylocaine Hydrochloride 0.5%: 20 cc. vials: A solution containing 5 mg. of lidocaine hydrochloride and 8 mg. of sodium chloride in each cc. Preserved with 1 mg. of methylparaben per cc.

Solution Xylocaine Hydrochloride 2%: 20 cc. vials and 1.8 cc. cartridges: A solution containing 20 mg. of lidocaine hydrochloride and 6 mg. of sodium chloride in each cc. Preserved with 1 mg. of methylparaben per cc.

Solution Xylocaine Hydrochloride 0.5% with Epinephrine Hydrochloride 1:100,000: 20 and 50 cc. vials: A solution containing 5 mg. of lidocaine hydrochloride, 0.01 mg. of epinephrine hydrochloride and 8 mg. of sodium chloride in each cc. Preserved with 1 mg. of methylparaben per cc.

Solution Xylocaine Hydrochloride 1% with Epinephrine Hydrochloride 1:100,000: 20 and 50 cc. vials: A solution containing 10 mg. of lidocaine hydrochloride, 0.01 mg. of epinephrine hydrochloride and 6 mg. of sodium chloride in each cc. Preserved with 1 mg. of methylparaben per cc.

Solution Xylocaine Hydrochloride 2% with Epinephrine Hydrochloride 1:100,000: 20 and 50 cc. vials and 1.8 cc. cartridges: A solution containing 20 mg. of lidocaine hydrochloride, 0.01 mg. of epinephrine hydrochloride and 6 mg. of sodium chloride in each cc. Preserved with 1 mg. of methylparaben per cc.

Solution Xylocaine Hydrochloride 2% with Epinephrine Hydrochloride 1:50,000: 20 cc. vials and 1.8 cc. cartridges: A solution containing 20 mg. of lidocaine hydrochloride, 0.02 mg. of epinephrine hydrochloride and 6 mg. of sodium chloride in each cc. Preserved with 1 mg. of methylparaben per cc.

U. S. patent 2,441,498.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, FEBRUARY 4, 1950

A NEW DRUG IN THE TREATMENT OF TUBERCULOSIS

Behnisch and his co-workers [1] at the laboratories of Farbenfabriken Bayer at the Elberfeld Works, Germany, have developed, in cooperation with Domagk, a group of chemical substances, thiosemicarbazones, which possess chemotherapeutic effect against tuberculosis. The activity of these products, according to these investigators, is not dependent on the sulfonamide or sulfone groups, nor on the thiazole or thiodiazole rings, but on an open chainlike arrangement of the nitrogen and sulfur atoms, such as is present in the thiosemicarbazones when suitably substituted. The most active of these substances is 4-aminoacetylbenzaldehyde thiosemicarbazone, designated as conteben or TbI/698. Domagk [2] states that this substance has an effect on the tubercle bacillus in vitro and in vivo. He demonstrated in experimental tuberculosis in guinea pigs that the effect is much like that of para-aminosalicylic acid. Although the mode of action of the drug has not been established, Domagk believes that it exerts a direct action on the tubercle bacillus because, in addition to inhibiting the growth of this organism, it also produces morphologic alterations resulting in abnormal size and granular disintegration, formation of threads on the surface of the bacilli and changes in the staining properties. Domagk found it advantageous to combine thiosemicarbazone with streptomycin in the treatment of experimental tuberculosis.

Mertens and Bunge [3] report on the clinical trials with 4-aminoacetylbenzaldehyde thiosemicarbazone on more than 10,000 patients with different types and stages of tuberculosis. These authors were responsible for the allocation of the drug and for the collection and analysis of some 60 clinical reports in Germany. In pulmonary tuberculosis it was more successful in lesions associated with a perifocal inflammatory process. The more recent the lesion and the better the blood supply, the more promising was the therapeutic effect. Miliary tuberculosis and tuberculous meningitis were not influenced by the drug. Chronic pulmonary tuberculosis reacted much less satisfactorily than the acute form. Cavernous processes occasionally responded well to oral administration of the drug. Severe progressive cavitation, the authors suggest, can be successfully treated by local application of the drug in combination with Monaldi's suction method. The drug proved satisfactory in the preparation of patients for thoracoplasties and for controlling postoperative complications. Like streptomycin, the drug is more effective in the treatment of lesions and mucous membrane tuberculosis such as those found with tuberculous tracheobronchitis, tuberculosis of the bronchus and laryngeal, intestinal and bladder tuberculosis. Its effect on renal tuberculosis and on tuberculosis of bones and joints appears to be encouraging.

The dosage must be individualized carefully. It must be adapted to the particular type and stage of the tuberculous process, the responsiveness of the manifestations of tuberculosis and the individual tolerance of the patient. The usual daily dose of conteben for adults is approximately 2 mg. per kilogram of body weight administered by mouth.

Among the toxic effects of the substance the authors mention gastric irritation, which develops in the beginning of the treatment and is manifested by lack of appetite, nausea and in some cases vomiting. These symptoms disappear in most cases with the continuance of the therapy. It is therefore advantageous to begin the treatment with the smallest doses and to increase them gradually. Some patients complained of headache and of symptoms suggestive of increased intracranial pressure. Other complications were conjunctivitis and skin rashes. There seemed to be, particularly in the beginning of the treatment, a depression in the function of the hematopoietic system, manifested by a drop in the erythrocytes and in hemoglobin. A mild anisocytosis and poikilocytosis generally had no serious implications and did not require discontinuance of the medication. Several cases of agranulocytosis were observed in the beginning of the treatment. The question of toxic damage to the liver has not been elucidated.

The German researchers claim that the thiosemicarbazones, as well as streptomycin and para-aminosalicylic acid, possess different modes of action on the tubercle bacillus and the tuberculous infection. This suggests the possibility of an intelligent combination

1. Behnisch, R.; Mietzsch, F., and Schmidt, H.: Chemical Studies on Thiosemicarbazones with Particular Reference to Antituberculous Activity, Am. Rev. Tuberc. 61:1 (Jan.) 1950.

2. Domagk, G.: Investigations on Antituberculous Activity of the Thiosemicarbazones in Vitro and in Vivo, Am. Rev. Tuberc. 61:8 (Jan.) 1950.

3. Mertens, A., and Bunge, R.: The Present Status of Chemotherapy of Tuberculosis with Conteben, a Substance of the Thiosemicarbazone Series: A Review, Am. Rev. Tuberc. 61:20 (Jan.) 1950.

of these chemotherapeutic agents. It will be the task of future clinical observations, they believe, to determine in which forms and stages of tuberculosis the individual chemotherapeutic agent is to be preferred and when a combination of several will enlarge the range of chemotherapy in tuberculosis.

Hinshaw and McDermott[4] have submitted to the Clinical Subcommittee of the Committee on Medical Research and Therapy of the American Trudeau Society a report of their observations, after a visit during September 1949 to ten German institutions, on the therapeutic effect of 4-aminoacetylbenzaldehyde thiosemicarbazone. Included in the ten institutions surveyed were more than 2,000 patients who had received the drug, usually for prolonged periods of time. They emphasize that conteben is not a sufficiently powerful antituberculous drug to exert a significant influence on miliary or meningeal tuberculosis. Other types of clinical tuberculosis which have been proved to be most responsive to other antituberculous drugs in America and elsewhere appear to have responded to conteben therapy in Germany. Most impressive have been the results observed in the more superficial but serious types of mucous membrane complications of extensive pulmonary tuberculosis, especially tuberculous laryngitis and tuberculous enteritis. Patients with pulmonary tuberculosis, treated before irreversible pathologic changes have developed, may respond to conteben therapy, but doubt remains as to whether this is the preferable drug when other drugs are available, notably streptomycin. In most forms of extrapulmonary tuberculosis there is some evidence, often incomplete and sometimes confusing, which suggests that conteben, alone or in combination with other antituberculous drugs, may prove to be a valuable adjunct in the treatment. Conteben has a potential toxicity which would seem to be definitely greater than is the case either with streptomycin or para-aminosalicylic acid. Nevertheless, on the basis of the present evidence there is reason to believe that with proper caution the drug can be administered for long periods of time. These authors feel that conteben antituberculous activity of the same general order as that of para-aminosalicylic acid, with a potential toxicity somewhat like that of the arsenicals used in the treatment of syphilis. The drug can be considered as an important addition to the currently available antimicrobial agents. It is the opinion of these authors that conteben would not replace streptomycin but could be used together with streptomycin in the treatment of tuberculosis. The data available in Germany, they conclude, are sufficiently promising to justify a prompt and thorough series of experimental and clinical trials in the United States.

4. Hinshaw, H. C., and McDermott, W.: American Trudeau Society: Medical Section of the National Tuberculosis Association, Am. Rev. Tubere. 62:145 (Jan.) 1950.

AMEBIASIS

Until the outbreak of the Chicago epidemic in 1933 amebiasis was believed to be encountered only in the tropics. The Chicago outbreak, however, called attention to amebiasis as a worldwide disease. Recent surveys with much improved laboratory methods, such as the use of polyvinyl alcohol preservative, hematoxylin-stained slides, Faust's flotation for cysts and culture of amebas show that approximately 20 per cent of the population of the United States is infested. Craig, Faust, D'Antoni and others have shown that most of the persons infected with Endameba histolytica do not present a textbook picture of amebiasis but suffer from a subclinical form of the disease or have chronic constipation alternating with short outbursts of diarrhea. Such patients usually seek medical aid for symptomatic disturbances. According to the situation of the main lesions, the symptoms may be localized in the appendiceal region, the hepatic flexure, the splenic flexure or the descending colon. Rectosigmoidal lesions are present in only about one third of the cases. Because of the mild symptoms, patients often do not come to the physician's office until the disease becomes chronic or until sequelae, especially certain forms of ulcerative colitis and an "irritative colon," have developed.

The greatest obstacle in the fight against amebiasis is the lack of laboratory personnel properly trained in parasitology. Food handlers cannot be controlled in all localities, and physicians, especially in small communities, are not always able to obtain a proper laboratory examination because of the small number of parasitologists available in medical laboratories. Even if every case of amebiasis could be called to the attention of the medical professor, a new problem would arise: what about the 20 per cent of the population who excrete E. histolytica in their feces? Only "work on the spot," progressive surveys and constant mindfulness of the real protean nature of the disease when the patient comes to the office will eradicate this scourge.

In the active treatment of the disease, much hope now is based on the use of drugs, particularly the newer antibiotics. However, some have the disadvantage of diminishing the number of intestinal bacteria which play an important role in the maintenance of normal nutrition. They must be given carefully and should be used only when the patient is seen frequently. The same is true for the iodine and arsenical compounds employed in the treatment of amebiasis. Emetine hydrochloride is the drug of choice only when there is liver involvement and for acute or subacute amebiasis. This drug is frequently toxic and must be given with great care. Several series of combination therapy may be necessary to produce a cure. There is a great diversity in the response of man to the different antiamebic

drugs. Thus amebiasis again confirms the old rule that the state of the patient is the only yardstick for the treatment and that only individualized medicine can achieve the best results.

Current Comment

RESEARCH COUNCIL FOR ECONOMIC SECURITY

The Research Council for Economic Security is a Chicago organization established in 1945 to prepare factual studies in the field of social security. It has published almost eighty studies on major phases of social and economic security, of which more than twenty-five are concerned with health and related problems. Single copies are available without charge. The independence of the council and the integrity of its research have aided acceptance of its findings. Propaganda and politics do not have any part in its work, and its publications have become acceptable for educational and legislative purposes. Medical societies and individual physicians, civic bodies, labor groups, chambers of commerce, editors, commentators and others have made frequent use of the studies. Recently the council completed a survey of employee benefit plans in twelve metropolitan areas in the United States. Based on some 6,500 returns, this nationwide summary is probably the most complete record of the character, extent and coverage of voluntary employee benefit plans in industry. It offers a convincing statistical record of the advance in the voluntary provision of medical care.

METABOLIC CONTROL OF ENDOTHELIUM

Evidence of metabolic control of endothelial functions is reported by Timiras and Selye[1] of the University of Montreal, Canada. They demonstrated an increased reticuloendothelial phagocytosis during the alarm reaction in rats. In a typical experiment 44 adult male rats were divided into four equal groups. One group served as controls. Animals of the three remaining groups were given no food for forty-eight hours. During the last twenty-four hours they were subjected to various stresses, such as temperature of 0 to 5 C., spinal cord transection and repeated, exhaustive, forced exercise. All animals were then given intravenous injections of 2 cc. of a 1:5 dilution of india ink in sodium chloride solution. One hour later the animals were killed and autopsies performed. Macroscopic and microscopic examinations showed that in the stressed animals there was a decided increase in reticuloendothelial phagocytosis of carbon particles in the lungs, kidneys, adrenals, bone marrow, hibernating gland, thymus and lymph nodes. Phagocytosis, however, was not increased in the liver and was slightly decreased in the spleen. Whether or not other reticuloendothelial functions, such as antibody production or release, were also increased was not determined.

1. Timiras, P. S., and Selye, H.: Science 110:560 (Nov. 25) 1949.

TENTH ANNUAL CONGRESS ON INDUSTRIAL HEALTH

The Tenth Annual Congress on Industrial Health, sponsored by the Council on Industrial Health of the American Medical Association and the Medical Society of the State of New York, is being held on February 20 and 21 at the Hotel Roosevelt in New York City. Elsewhere in the issue (page 345) is the program for the congress, which this year is emphasizing the health and welfare of workers in industry and business. Most of the discussions during the congress will be directed toward clarifying the objectives of industrial health services and bringing these benefits to more workers. One phase of the program will be a symposium on voluntary health insurance plans. The Annual States Relations Dinner will be held on Monday, February 20 at 6:30 p. m. The program will include a discussion of the values of regional conferences and of ten years of industrial health progress.

INDEX-CATALOGUE TO END

The Army Medical Library will discontinue the publication of the "Index-Catalogue." After publication of the volume currently in preparation, the Library will publish a volume or volumes which will complete the monographic holdings to the midcentury mark. Then the Library will publish only the most useful portion of the backlog of over 1,750,000 unpublished references which have accumulated over the years. At the same time, the Library's *Current List of Medical Literature* will be augmented and improved to provide more effective service. An author index will be added, a standard list of regularly surveyed journals will be introduced, classification by broad journal groupings will be abandoned, the format and frequency of publication may be altered and a cumulative subject index will be provided. Provision for a continuing record of the Library's monographic holdings has been assured in the form of an annual supplement to the "Library of Congress Catalog of Printed Cards." The "Index-Catalogue" was planned in the mid-nineteenth century. Medical research and the publication resulting from that research had an altogether different character from that of the mid-twentieth century. New fields have opened; millions of dollars have been poured into organized medical research, and the literature has increased tremendously. This made it impossible to maintain the "Index-Catalogue" on a current basis. Furthermore, the alphabetic sequence of publication made it necessary to defer publication of many entries until twenty years and more had elapsed, thus greatly diminishing the usefulness of the work. The Army Medical Library believes that its work must be much more closely integrated with current medical research. It is and will continue to be a center of historical research in the medical sciences, but it does not wish to attempt continuance of a form of publication which is no longer practicable.

ORGANIZATION SECTION

Official Notes

TENTH ANNUAL CONGRESS ON INDUSTRIAL HEALTH

Hotel Roosevelt, New York

Feb. 20-21, 1950

Sponsored by
The Council on Industrial Health
American Medical Association
and
The Medical Society of the State of New York

MONDAY, 10:00 a. m.—BALLROOM

OPENING SESSION

DR. ANTHONY J. LANZA, *Presiding*
Chairman, Council on Industrial Health

ADDRESS OF WELCOME
JOHN J. MASTERSON, M.D., President, Medical Society of the State of New York, Brooklyn.

SYMPOSIUM ON IF DISASTER COMES—WILL INDUSTRY BE PREPARED?

DR. WARREN F. DRAPER, *Moderator*

What is our Backlog of Experience?
GEORGE BAEHR, M.D., formerly Chief Medical Officer, U. S. Office of Civilian Defense, New York

How Should the Lessons of World War II be Applied to Future Planning?
WILLIAM L. WILSON, Colonel, M.C., U. S. A., Special Assistant to The Surgeon General (Army), Washington, D. C.

What, if Any, Specific Plans are Now Available for Use in Industry?
JAMES G. TOWNSEND, M.D., Chief, Division of Industrial Hygiene, U. S. Public Health Service, Washington, D. C.

The Commission on Chronic Illness—Its Importance to Labor and Industry
MORTON L. LEVIN, M.D., Director, Commission on Chronic Illness, Assistant Commissioner for Medical Services, State of New York Department of Health, Albany

A Concept of Industrial Psychiatry (Illustrated by a short documentary sound film)
T. M. LING, M.D., M.R.C.P., Medical Director, Roffey Park Rehabilitation Centre, Horsham, Sussex, England

MONDAY, 12:30 p. m.—HENDRIK HUDSON ROOM

MARY DONLON LUNCHEON

Sponsored by
The Medical Society of the State of New York
The American Academy of Compensation Medicine
The Council on Industrial Health

New York State's New Approach to Disability Benefits Insurance
MARY DONLON, Chairman, Workmen's Compensation Board, State of New York

MONDAY, 2:00 p. m.—BALLROOM

SYMPOSIUM ON PREPAYMENT HEALTH PLANS FOR INDUSTRIAL WORKERS

DR. W. A. SAWYER, *Moderator*

Eastman Kodak Company, Rochester, New York; Chairman, Correlating Committee on Medical Care for Industrial Workers, Council on Medical Service, American Medical Association

Introductory Statement
THOMAS A. MCGOLDRICK, M.D., Member, Council on Medical Service, American Medical Association, Brooklyn

I. Medical Society and Blue Cross Plans
JOHN F. MCCORMACK, Vice President, United Medical Service, Inc., New York
PAUL R. HAWLEY, M.D., Chief Executive Officer, Blue Cross-Blue Shield Commissions, Chicago

II. The Union Plans
LEO PRICE, M.D., Director, Union Health Center, New York
WARREN DRAPER, M.D., Executive Medical Officer, Welfare and Retirement Fund U. M. W. of America, Washington, D. C.

III. Management Plans
H. B. CROW, Special Representative, Weirton Steel Company, Weirton, West Virginia
D. O. WRIGHT, M.D., Director, Medical Department, American Cast Iron Pipe Company, Birmingham, Alabama

IV. Private Insurance Plans
EDWARD A. GREEN, 2nd Vice President, John Hancock Mutual Life Insurance Company, Boston
EMERSON L. MITCHELL, District Supervisor, Group Department, Provident Life and Accident Insurance Company, Chattanooga, Tennessee

Question and Answer Period

MONDAY, 2:00 p. m.—PARLORS A AND B

CONFERENCE ON NOISE IN INDUSTRY

Co-Chairmen

STACY R. GUILD, Ph.D., Associate Professor of Otology, Johns Hopkins University School of Medicine, Baltimore.

JAMES H. STERNER, M.D., Associate Medical Director, Eastman Kodak Company, Rochester, New York.

This is a working conference. Attendance is limited to invited guests.

Conducted by the Committee on Physical Agents of a Hazardous Nature (Established at the Ninth Annual Congress on Industrial Health) and the Sub-Committee on Noise in Industry, American Academy of Ophthalmology and Otolaryngology

MONDAY, 6:30 p. m.—HENDRIK HUDSON ROOM

ANNUAL STATES RELATIONS DINNER

DR. CLARENCE D. SELBY, *Presiding*
Chairman, Committee on Professional Relations
Council on Industrial Health

Introduction of Dr. J. F. McCahan, Assistant Secretary of the Council on Industrial Health

Introduction of Guests

Regional Conferences—Desirable Organization and Values
FRANK PRINCI, M.D., Director, Division of Industrial Medicine, University of Colorado, Denver
EDWARD C. HOLMBLAD, M.D., Managing Director, American Association of Industrial Physicians and Surgeons, Chicago

TEN YEARS OF INDUSTRIAL HEALTH PROGRESS

Growth and Acceptance
O. A. SANDER, M.D., Associate in Medicine, Marquette University Medical School, Milwaukee

Scientific Achievement
PHILIP DRINKER, B.S., Ch.E., Editor, *Archives of Industrial Hygiene and Occupational Medicine*, Boston

Professional Preparation
ROBERT A. KEHOE, M.D., Kettering Laboratory of Applied Physiology, University of Cincinnati College of Medicine, Cincinnati

A Brief Look Ahead
ANTHONY J. LANZA, M.D., Institute of Industrial Medicine, New York University-Bellevue Medical Center, New York

TUESDAY—BALLROOM

SYMPOSIUM ON HUMAN RELATIONS IN BUSINESS AND INDUSTRY

DR. RAYMOND HUSSEY, *Presiding*

MORNING SESSION—9:30

Keynote Address—The Human Side of Business
J. WARD KEENER, Vice President, The B. F. Goodrich Company, Akron, Ohio

Engineering Potentials in Human Relations
RENATO CONTINI, Research Coordinator, College of Engineering, New York University, New York

Responsibilities of Industrial Medicine in Gerontology
EDWARD STIEGLITZ, M.D., Washington, D. C.

Education of Employees for Retirement
R. B. ROBSON, M.D., Medical Director, General Motors of Canada, Ltd., Windsor, Ontario

General Discussion

AFTERNOON SESSION—2:00

PANEL ON THE EXPERIENCE OF GENERAL MOTORS IN DEVELOPING NEW TECHNICS FOR SELECTION, PLACEMENT AND FOLLOW-UP OF EMPLOYEES

GEORGE A. JACOBY, *Chairman*
Director of Personnel Services, Detroit

Selective Placement
MAX R. BURNELL, M.D., Medical Director, Detroit

Interviewing Technics
ALGIE A. HENDRIX, Director of Employment Practices, Flint, Mich.

Employment Testing
OBLO L. CRISSEY, Ph.D., Associate, Personnel Evaluation Services, General Motors Institute, Flint, Mich.

The Foreman's Role in: Selecting New Employees and Employee Performance Rating
BYRON L. STEWART, Assistant Personnel Director, Delco Remy Division, Anderson, Ind.

Employee Attitude Evaluation
WILLIAM H. HARVEY, Director of Industrial Relations, Electromotive Division, La Grange, Ill.

General Discussion

TUESDAY, 12:30 p. m.—FOYER

LUNCHEON

Sponsored by the New York Industrial Nurses' Club

We Need to be Unified
(Medical-Nursing-Management Relations)
GLADYS L. DUNDORE, R.N., Executive Secretary, American Association of Industrial Nurses, Inc., New York

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TUESDAY, 2:00 p. m.—SMALL BALLROOM

SYMPOSIUM

Case Finding in Industry

Moderator, DR. A. J. LANZA

A Statement on General Objectives
THOMAS DUBLIN, M.D., Executive Secretary, National Health Council, New York
Industrial Case Finding for Tuberculosis
FRANK T. JONES, National Tuberculosis Association, New York
Cardiovascular Disease Case Finding in the Industrial Health Program
JOHN W. FERBER, M.D., Director of Public Health, American Heart Association, New York
Testing for Eye Problems
FRANKLIN M. FOOTE, M.D., National Society for the Prevention of Blindness, New York
The Essentials of a Successful Multiphasic Screening Survey Based upon a Recent Survey Conducted in San Jose, Calif.
C. KELLY CARELO, M.D., San Jose, Calif.
Correlation of Case Finding with Industrial Medical Services
ROBERT C. PAGE, M.D., Medical Director, Standard Oil Company of New Jersey, New York
Correlation of Case Finding with Private Physician
HARRY V. SPAULDING, M.D., President, American Academy of Compensation Medicine, New York

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Washington Letter

(From a Special Correspondent)

Jan. 30, 1950.

Representative Keating Espouses Different "Health Insurance" Plan

Advanced by its sponsor as a practical method of forestalling enactment of compulsory health insurance, H. R. 6819 was introduced in the House January 17, authorizing members of voluntary prepayment health plans to deduct premium payments from their income taxes. It was offered by Representative Kenneth B. Keating (Republican, New York). On January 12, he filed a similar measure (H. R. 6727), but, when it was found to contain a number of technical errors, H. R. 6819 was introduced for consideration in its stead.

Persons having an adjusted gross income of $2,000 or less would be permitted to deduct 90 per cent of their annual payment to a prepayment plan. Thus, if the income tax came to $20 and premiums for the year totaled $18, the net tax due would be $3.80. Eighty-five per cent would be deductible for those in $2,000-$4,000 income brackets; 80 per cent, $4,000-$6,000; 75 per cent, $6,000-$8,000; 70 per cent, $8,000-$10,000, and 60 per cent for those above $10,000.

"The question," said Representative Keating, "is whether the real interest of the socialized medicine advocates is in building up another formidable government agency and keeping taxes high or in expanding health insurance to protect more people." H. R. 6819 has been referred to the House Ways and Means Committee, since it involves federal revenues.

"Deductible" Compulsory Health Insurance Bill Filed

Representative Reva Beck Bosone (Democrat), first term member of Congress from Utah, on January 16 introduced H. R. 6766, a bill establishing compulsory health insurance with a deductible benefits clause. By its provisions, the insured party would pay the first $50 in medical bills each year and expenditures in excess of that figure would be paid for out of the United States Treasury. For dental expenses, the deductible figure is set at $25. Otherwise, the bill is little different from the Thomas-Murray-Dingell measure as far as compulsory coverage is concerned.

A 3 per cent payroll tax is provided, borne equally by employer and employee. If more money is needed to keep the plan solvent, a deficiency appropriation up to 1 per cent of the estimated annual average of all wages is authorized. The Bosone scheme calls for administration by the Federal Security Agency and setting of fee schedules by special boards in each of the states, its members to be appointed by "the medical society having the largest membership in the state." Each board would be composed of six physicians, three dentists, two nurses, two hospital supervisors and two pharmacists.

"In drafting the bill," said Mrs. Bosone, "I have retained many of the fine aspects of the administration bill already introduced. There may be some 'bugs' in my bill. There is no perfect legislation, but this is a new plan to be reviewed for its defects and merits in 1954."

Her proposed program would be for a three year trial period, to be extended or terminated by Congress in 1954. The bill has been referred to the House Interstate and Foreign Commerce Committee.

Legislative Mill Grinding Slowly

The first month of the second session of the Eighty-First Congress passed into history with comparatively little action on pending health and medical care legislation. Several new bills were introduced, but the feeling persists in the Capitol that none of these will be enacted into law this year. Rather, whatever measures are passed are more likely to be certain ones introduced in 1949, approved by one branch of Congress or the other and carried over into 1950 for final action. Most conspicuous in this group are the controversial bills on federal aid to medical education and local school health services, as well as the less disputed plans for government support of public health units and establishment of new medical research centers at Bethesda, Md.

Giving serious consideration to constructive proposals advanced by the American Medical Association, the House Committee on Interstate and Foreign Commerce was scheduled to take action early in February on revision of H. R. 5940, which provides for federal financial support to schools of medicine, nursing and certain others in the health sciences. Next priority is given to the question of subsidizing local public health agencies throughout the country.

On the Senate side of the Capitol, chief interest is attached to the plan sponsored by Senator Lester C. Hunt (Democrat, Wyoming), which calls for a Department of Health, establishment of a voluntary type national health insurance program and provision for loans and grants to physicians, medical groups and hospitals in "shortage areas." Senator Paul Douglas (Democrat, Illinois) also has announced his intention of introducing a health insurance bill designed to forestall enactment of the Thomas-Murray-Dingell bill, but it is not expected to be drafted for at least another month.

Representative Keefe Deprecates Antihistamine Advertising

Representative Frank B. Keefe (Republican, Wisconsin) made a strong speech on the floor of the House January 18 deprecating advertising claims made for antihistamine drugs as "cold cures" and recommending legislative steps to tone them down in the interest of truth and accuracy.

"It can be stated authoritatively," he said, "that the Food and Drug Administration has most emphatically not endorsed any antihistamine cold preparations. The general public, I am afraid, is being led to believe that the effectiveness of these remedies has been vouched for by the Food and Drug Administration."

He emphasized that the Food and Drug Administration is not responsible for a drug's efficacy but, rather, is legally concerned only with its safety to the user.

"I am fearful that the person who has a cold caused by a virus infection, for example, relying on this advertising may resort to self medication in the hope that he can cure himself in twenty minutes, as some of the advertising states, when

there is no clinically established factual basis for such statement," Representative Keefe asserted.

He said the Food and Drug Act should be amended to require makers of new drug preparations to submit convincing evidence, backed by clinical findings, that the product is therapeutically effective before it can be placed on over-the-counter sale.

Medical Legislation

STATE LEGISLATION

Massachusetts

Bills Introduced.—H. 250 proposes the creation of a special commission to investigate and study anterior poliomyelitis and the problem of its control. H. 572, H. 1377 and H. 1067 propose the enactment of a cash sickness disability law. H. 453, to amend the law relating to tests of sight and hearing of school children, proposes that such tests of sight shall be made by qualified physicians or registered optometrists and the tests of hearing shall be made by qualified physicians or persons specially trained in giving such tests. H. 535 proposes amendments to the general law providing for the creation of a voluntary system for the payment of hospital, surgical operation, sickness, bodily injury and maternity benefits to employees. H. 536, to amend the law relating to the conduct of hounds, proposes to define the word "hound" as including any place where dogs are housed in connection with scientific experimentation before, after or during the course of such experimentation. Such kennels would have to be licensed and would be open for inspection by a humane agent of the Massachusetts Society for the Prevention of Cruelty to Animals or of the Animal Rescue League of Boston. H. 539 proposes regulations for the housing of institutions engaged in the practice of using, buying, selling or trading dogs, cats and horses for medical, surgical or scientific research purposes. H. 601 proposes that blood banks, except those in registered hospitals, shall be under the supervision of the department of public health and subject to inspection by district health officers. H. 688 proposes to memorialize the Congress of the United States to vote against any attempt that may be made to subject the American people to any form of compulsory health insurance. H. 703, to amend the law relating to the examination of school children's feet, proposes that such examination may be made by a physician, chiropodist or podiatrist. H. 707 proposes to require the trustees of the University of Massachusetts to establish, as a part of such university, a school of chiropody. H. 710 proposes to require the trustees of the University of Massachusetts to establish two medical schools, one in the western part of the state and one in the eastern part. H. 779 proposes to establish liens in favor of hospitals and other institutions in the state on all causes of action for damages accruing to a patient therein or to the legal representatives of such patient for the reasonable charges for hospital care, treatment and maintenance necessitated by the injuries giving rise to such causes of action. H. 780, to amend the workmen's compensation act, proposes that the word "physician" shall be deemed to include a chiropodist. H. 833 provides for the appointment of a special commission to make a study of the use of animals for medical experimentation. This commission will be required to report any plans or methods approved by it and its recommendations on or before the second Wednesday of December 1950. H. 1313 proposes regulations for the organization of nonprofit hospital service corporations. H. 1353 proposes to authorize the department of labor and industries to require every physician treating a patient whom he believes to be suffering from any ailment or disease contracted as a result of the nature, circumstances or conditions of the patient's employment to report such information to the department. The proposal would also authorize the department to issue a list of such diseases which must be regularly reported by physicians. H. 1310 proposes that no medical, surgical or other scientific experiment, operation or demonstration performed on one or more living cats or dogs for the purpose of teaching or instructing students shall be performed more than once per calendar year in any educational institution, hospital or laboratory within the state and then only for the purpose of recording said experiment, operation or demonstration on film or by television for the teaching of students. H. 1453 proposes that any duly registered physician licensed to practice medicine and surgery in the commonwealth shall be entitled to treat his or her patients admitted to any public or semipublic hospital supported in whole or in part by contributions from the commonwealth and that no licensed physician shall be discriminated against or refused the right of practicing his profession in any public hospital supported by public funds because such physician is not a member of the Massachusetts Medical Society. H. 1665, to amend the workmen's compensation law, makes provision for the appointment of qualified impartial physicians to examine injured employees. H. 1804, to amend the law relating to chiropody, proposes that chiropody shall mean the treatment of the structure of the human foot by medical, mechanical or surgical means without the use of other than local anesthetics. The proposal would further provide that its provisions should not apply to surgeons of the United States Army, Navy or of the Marine hospital service nor to registered physicians in the commonwealth. H. 2032 proposes that one member of the board of registration in medicine shall be a chiropractor. Under the proposal chiropractors would be required to pass the same examination as physicians except that such examination would not include the subjects of materia medica and surgery, and a licensed chiropractor would be entitled to diagnose and treat diseases, injuries, deformities and other physical or mental conditions, by the use of any and all methods, as herein provided, such as palpating, diagnosing, adjusting and treating diseases, injuries and defects of human beings by the application of manipulative manual and mechanical means, including all natural agencies imbued with the healing act, such as food, water, heat, cold, electricity, vacuum cupping and drugless appliances without the use of drugs or what are commonly known as medicinal preparations, or in any manner severing or penetrating any of the tissues of the human body, known as surgery. S. 54 proposes the creation of a special commission to make a survey and study of the subject of spastic paralysis and the causes and treatment thereof with a view to alleviating the suffering of persons affected thereby and to the advisability of providing a noncontributory pension for such persons. S. 97 proposes regulations for the creation of nonprofit hospital service corporations.

Mississippi

Bills Introduced.—H. 3 and S. 14 propose the creation of a four year medical school as a department in the University of Mississippi.

New York

Bills Introduced.—A. 119 proposes to make it unlawful for any person to sell at retail or give away any antihistamine drug or any preparation containing antihistamines without obtaining a prescription of a duly licensed practitioner of medicine, dentistry or podiatry. A. 236, to amend the penal law, proposes that the owner, lessee, proprietor and manager of every public hotel, club, camp and every other public resort having sleeping accommodations for 200 or more persons must have a resident physician in attendance at all times during the period of operation. A. 396 proposes an appropriation to the department of health to defray the cost of research in cancer control. A. 447, to amend the public health law relating to the uniform narcotic drug act, proposes that the word "physician" as used therein shall include osteopathy. S. 165, to amend the education law, proposes to authorize the state university trustees to establish a medical school in the county of Bronx. S. 166, to amend the public health law, proposes to require physicians to report cases of infantile paralysis to the county health officer. S. 353, to amend the mental hygiene law, proposes regulations establishing minimum standards for the staff of state mental institutions.

Coming Medical Meetings

Annual Congress on Industrial Health, New York, Roosevelt Hotel, Feb. 20-21. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

Annual Congress on Medical Education and Licensure, Chicago, Palmer House, Feb. 5-7. Dr. Donald G. Anderson, 535 N. Dearborn St., Chicago, Secretary.

American Academy for Cerebral Palsy, New York, Waldorf-Astoria Hotel, Feb. 16-17. Dr. Meyer A. Perlstein, 4743 N. Drake Ave., Chicago 25, Secretary.

American Academy of Allergy, Los Angeles, Hotel Biltmore, March 6-8. Dr. Theodore L. Squier, 208 E. Wisconsin Ave., Milwaukee 2, Secretary.

American Academy of General Practice, St. Louis, Kiel Auditorium, Feb. 20-23. Mr. Mac F. Cahal, 406 W. 34th St., Kansas City, Mo., Executive Secretary.

American Academy of Orthopedic Surgeons, New York, Waldorf-Astoria Hotel, Feb. 11-16. Dr. Harold B. Boyd, 869 Madison Ave., Memphis, Tenn., Secretary.

American Goiter Association, Houston, Texas, March 9-11. Dr. George C. Shivers, 100 E. St. Vrain St., Colorado Springs, Colo., Secretary.

American Society for Surgery of the Hand, New York, Feb. 10-11. Dr. Joseph H. Boyes, 1401 S. Hope St., Los Angeles 15, Secretary.

Chicago Medical Society Annual Clinical Conference, Chicago, Palmer House, Feb. 28-March 3. Dr. H. Kenneth Sentiff, 30 N. Michigan Blvd., Chicago 2, Secretary.

Dallas Southern Clinical Society, Dallas, Texas, March 13-16. Miss Betty Elmer, 1133 Medical Arts Bldg., Dallas 1, Executive Secretary.

Michigan Postgraduate Clinical Institute, Detroit, Book-Cadillac Hotel, March 8-10. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing 8, Secretary.

Mid-Atlantic Section, American Urologic Association, Hot Springs, Va., The Homestead, March 23-25. Dr. H. N. Dorman, 1025 Connecticut Ave. N. W., Washington 6, D. C.

Missouri State Medical Association, St. Louis, March 26-29. Dr. H. E. Petersen, 634 N. Grand Blvd., St. Louis 3, Secretary.

National Society for the Prevention of Blindness, Miami, Fla., Hotel Floridian, March 26-30. Dr. Franklin M. Foote, 1790 Broadway, New York 19, Executive Director.

New Orleans Graduate Medical Assembly, New Orleans, Municipal Auditorium, March 6-9. Dr. Woodard D. Beacham, 1430 Tulane Ave., New Orleans, Secretary.

South Atlantic Association of Obstetricians and Gynecologists, Roanoke, Va., Hotel Roanoke, Feb. 9-11. Dr. Emmett D. Colvin, 1259 Clifton Road N.E., Atlanta 6, Ga.

Southeastern Allergy Association, Columbia, S. C., Columbia Hotel, Feb. 11-12. Dr. Katharine B. MacInnis, 1515 Bull St., Columbia 49, S. C., Secretary.

Southeastern Surgical Congress, Washington, D. C., March 6-9. Dr. Benjamin T. Beasley, 45 Edgewood Ave. S.E., Atlanta 3, Ga., Secretary.

GOVERNMENT SERVICES

ARMY

THE ARMY'S HEALTH

Major Gen. R. W. Bliss, Surgeon General, announces that the Army's health was better in 1949 than in any other year. Preliminary figures show that the rate of admissions for 1949 was 128 per 100,000 strength per average day. Admissions in Army medical reporting include not only hospital cases but all persons relieved from duty because of illness or injury beyond the actual day of onset. The 1949 report shows an improvement in Army health for the fourth consecutive year and compares with an average wartime rate, excluding battle casualties, of 202 admissions per 100,000 per day. There was also a decline in the death rate, particularly in deaths from disease. The 1949 figures for total deaths were 200 per 100,000 strength per year, against 220 for 1948 and 230 for both 1946 and 1947. Comparable rates released by the U. S. Public Health Service for the civilian population showed 989 and 1,008 deaths per 100,000 in the United States during 1947 and 1948, respectively.

INTER-AGENCY HOSPITAL INSTITUTE

The third Inter-Agency Hospital Institute, to be sponsored by the Army, will be held April 17-May 5 at the Army Medical Center, Washington, D. C. The purpose is to give hospital managers of the three military and three nonmilitary agencies controlling government hospitals a wide concept of management of federal and civil hospitals, so as to create an objective attitude of leadership in hospital management and administration. Participating agencies are the Army, Navy, Air Force, Veterans Administration, Public Health and Indian Affairs. Two previous hospital institutes have been conducted by the Veterans Administration, one in January 1949 and one in October 1949. They are held every six months.

PERSONAL

Col. Sam F. Seeley, chief of surgical service at Walter Reed General Hospital, Washington, D. C., addressed the fourteenth annual Postgraduate Medical Assembly of Southwest Texas, January 24-26 in San Antonio, Texas, on "Intra-Arterial Transfusion in Circulatory Collapse," "Present Status of the Treatment of Shock Due to Trauma" and "Use of Combined Antibiotic Therapy in Fulminant Peritonitis." According to a release from Walter Reed Hospital, the administration of blood to overcome or prevent shock and circulatory collapse was first performed in the United States by Colonel Seeley in 1939.

Lieut. Col. John H. Kuitert (MC) has become chief of the physical medicine service at Walter Reed General Hospital, Washington, D. C.; since 1946 he has been chief of the physical medicine services at Fitzsimons General Hospital, Denver, and Tripler General Hospital, Honolulu.

The following medical officers have been certified by the American Board of Psychiatry and Neurology, bringing to 14 the number of certified psychiatrists in the Army Medical Corps: Lieut. Col. Frank R. Drake, Major John J. Kavanaugh and Lieut. Col. Herman Wilkinson.

NAVY

MONTHLY MEDICAL MEETING

At the regular monthly medical meeting at the Navy Medical School, Bethesda, Md., January 27, Dr. C. Charles Burlingame of Hartford, Conn., spoke on "Psychiatry in Medicine—One and Inseparable."

NEW REGULAR OFFICERS

The following Reserve medical officers on active duty have been appointed to the Regular Navy Medical Corps:

Lieut. (jg) Deck E. Chandler, Clover, S. C.
Lieut. (jg) Robert C. Hasfedt, Harrisburg, Pa.
Lieut. (jg) Billy D. McKneely, San Saba, Texas.
Lieut. (jg) Pierce P. Newman Jr., Navasota, Texas.

PERSONAL

Commanders Joseph M. Hanner and Philip J. McNamara have recently been certified by the American Board of Surgery.

Commanders Clifford A. Stevenson and Leo W. Olechowski have been nominated for duty under instruction in the Navy's Graduate Medical Training Program to a fellowship in children's orthopedics at Duke University School of Medicine, Durham, N. C., and to a residency in surgery at the Naval Hospital, Oakland, Calif., respectively.

Comdr. E. A. Hynes (MC) has been certified in ophthalmology, having successfully passed the examination of the American Board of Ophthalmology.

Comdr. Leonard H. Barber and Lieut. Comdr. George W. Deyoe have been nominated for duty under instruction in the Navy's Graduate Medical Program to a residency in radiology at the Naval Hospital, San Diega, Calif., and to instruction in basic science in orthopedic surgery at Northwestern University Medical School, Evanston, Ill., respectively.

The following Reserve medical officers have been nominated for voluntary recall to active duty: Comdr. Frank W. Reynolds, Richmond, Va.; Lieut. Comdr. Kenneth J. Wharram, Harlingen, Texas, and Lieut. (jg) Joseph M. Ward (MC), U.S.N.R., of Robersonville, N. C.

MISCELLANEOUS

DR. NELSON BECOMES MEDICAL DIRECTOR

Dr. Erwin E. Nelson has been appointed Medical Director of the Food and Drug Administration to succeed Dr. Robert T. Stormont, who accepted the secretaryship of the Council on Pharmacy and Chemistry of the American Medical Association in January. Dr. Nelson, a native of Missouri, has a Ph.D. from the University of Missouri and an M.D. from the University of Michigan. Formerly he was professor of pharmacology at his alma mater and later at Tulane University School of Medicine, New Orleans. From 1943 to 1946 he was director of research of the Wellcome Research Laboratories and since 1947 has been chief of the new-drug section of the Food and Drug administration. He is a past president of the American Society of Pharmacology and Experimental Therapeutics, has for many years been a member of the revision committee of the United States Pharmacopeia and is at present adjunct professor of pharmacology at the George Washington University School of Medicine, Washington, D. C.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ALABAMA

The Stuart Graves Lecture.—Dr. Morris Fishbein, Chicago, will deliver the third annual Stuart Graves Lecture in the auditorium of the Medical College of Alabama in Birmingham on February 16 at 8 p. m. on "The Socialized Medicine Problem." This lecture is sponsored by the Beta Phi Chapter of Nu Sigma Nu Fraternity in honor of Dr. Stuart Graves, who was dean of the University of Alabama School of Medicine in Tuscaloosa for many years. Physicians and medical students are cordially invited.

COLORADO

Program on Resuscitation and Inhalation Therapy.—The Medical Disaster Commission of the Colorado State Medical Society, in cooperation with the Graduate and Postgraduate Division of the University of Colorado School of Medicine, is sponsoring a program for the laity at the University of Colorado Medical Center, Denver, February 16-18. A 7 p. m. Dr. Foster Matchett, chairman of the commission will explain the need for knowledge of emergency resuscitation among the lay public. Two films, "Help Wanted" and "Before the Doctor Comes," will be shown. At 8 p. m. Dr. Philip A. Lief, head of the Division of Anesthesiology of the university, will lecture on the topic "Bring Them Back Alive—Resuscitation for the Layman." His talk will be followed by demonstrations on the technics of artificial respiration under the supervision of Harry W. Shade, director of first aid, water safety and accident prevention, Denver Chapter of the American Red Cross. The evening program will end with viewing of exhibits on modern apparatus for resuscitation and inhalation therapy. On February 17 and 18 a course on resuscitation and inhalation therapy will be given at the University of Colorado Medical Center and will be opened to physicians, nurses, firemen, ambulance drivers and others vitally interested in the problems of resuscitation and oxygen therapy.

GEORGIA

Graduate Assembly.—The Atlanta Graduate Medical Assembly will be held in the Municipal Auditorium in Atlanta February 6-8. Visiting speakers and their subjects are as follows:

Arthur H. Blakemore, New York, Portacaval Shunt.
Alexander Brunschwig, New York, Operability of Cancer.
Meredith F. Campbell, New York, Urology.
Louis K. Diamond, Boston, Rh Factor.
Arthur C. DeGraff, New York, Heart.
Maxwell Finland, Boston, New Antibiotics.
Richard H. Freyberg, New York, Compound E in Arthritis.
Chevalier L. Jackson, Philadelphia, Bronchoscopy.
Herbert C. Maier, New York, Chest Surgery.
James F. Norton, Jersey City, N. J., Extraperitoneal Cesarean Section.
Eugene P. Pendergrass, Philadelphia, X-Ray.
Robert L. Sanders, Memphis, Tenn., Biliary and Peptic Ulcer Surgery.
Albert M. Snell, Rochester, Minn., Medical Treatment of Gallbladder and Liver.
Donald H. Stubbs, Washington, D. C., Vascular and Circulatory Collapse.
Walter G. Stuck, San Antonio, Texas, Backache.
Oscar Swineford Jr., Charlottesville, Va., Allergy.
Willard O. Thompson, Chicago, Misuse of Estrogens—Obesity.
Richard W. TeLinde, Baltimore, Cancer in Situ (Cervix).
Julius L. Wilson, New Orleans, Chest Disease.
Harold G. Wolff, New York, Headache.

For information address Mrs. Stewart R. Roberts, Executive Secretary, 768 Juniper Street, N.E., Atlanta, Ga.

ILLINOIS

Neurologic Society Meeting.—The Interurban Neurosurgical Society will meet February 18 at the University Club, Chicago, at 9:30 a. m. The following program has been arranged:

Elmer C. Schultz, Memphis, Tenn., Cervicobrachial Pain.
Percival Bailey, Chicago, Result of Cortical Extirpations.
Wallace B. Hamby, Buffalo, Surgical Treatment of Intracranial Aneurysms.
Moses Ashkenazy, Chicago, Radioactive Diiodofluorescein in the Diagnosis of Tumors of the Central Nervous System.

Chicago

Establish Cutter Professorship in Medicine.—A gift of $750,000 has been received by Northwestern University to establish the Irving S. Cutter Memorial Professorship in the School of Medicine by an alumnus who wishes to remain anonymous. The gift will provide also for an assistant professorship of medicine. Dr. Cutter was dean of the Northwestern Medical School from 1925 to 1941 and head of Passavant Memorial Hospital from 1928 until his death in 1945. This contribution, the largest ever received from a Northwestern alumnus, will be used to create the school's second clinical endowed professorship; the other is the Louis Grunow Professorship in Surgery, established last year by William C. Grunow.

Conference on Tuberculosis Rehabilitation.—The Tuberculosis Institute of Chicago and Cook County is sponsoring the first annual conference on tuberculosis rehabilitation at the LaSalle Hotel on February 24-25. The opening session will deal with "Getting the Patient Back Into Industry." Friday afternoon will be devoted to the subject, "Returning the Patient to Normal Life." The Saturday morning session will deal with "How Sanitarium Rehabilitation Programs Have Worked Out." The Saturday afternoon program will be a panel discussion, in which the role of the clinic doctor, field nurse, sanitarium doctor, social worker, occupational therapist, rehabilitation counselor and the tuberculosis association will be brought out in connection with specific cases. There will be a banquet Friday evening.

Chest Roentgenograms in Cook County.—The Tuberculosis Institute of Chicago and Cook County reported January 12 that a total of 373,973 free chest roentgenograms were made in Chicago and Cook County in 1949, mostly through the use of mobile units by the institute and the Municipal Tuberculosis Sanitarium. The 1949 goal was 350,000. The number of roentgenograms made represents an increase of 15.6 per cent over those made in 1948.

Medical Society's Centennial Conference.—The Chicago Medical Society, celebrating its one hundredth anniversary, will present its annual Clinical Conference February 28 to March 3 at the Palmer House. There will be clinical sessions, lectures, color television of surgical procedures and pathologic and dermatologic demonstrations. The registration fee is $5. The program is as follows:

Charles D. May, Minneapolis, Megaloblastic Anemia in Infancy.
Lawrence R. Boies, Minneapolis, Headache and Neuralgia of Nasal Origin.
Samuel F. Haines, Rochester, Minn., Radioactive Iodine in the Treatment of Hyperthyroidism.
Russell H. Morgan, Baltimore, Early Detection of Gastric Cancer.
Henry E. Michelson, Minneapolis, Cutaneous Cancer.
John H. Gibbon Jr., Philadelphia, Carcinoma of the Lung.
Herman F. Johnson, Omaha, Management of Extremity Trauma in Multiple Injuries.
Francis M. Rackemann, Boston, Practical Management of Patients with Asthma.
J. Garrott Allen, Chicago, The Patient with Abnormal Bleeding.
Lewis J. Pollack, Chicago, Neurologic Aspects of the Unconscious Patient.
J. Thornton Wallace, Brooklyn, Management of Pregnancy, Labor, Delivery and Puerperium in Chronic Cardiac Patients.
Edwin P. Maynard Jr., Brooklyn, Heart Disease and Pregnancy.
Shields Warren, Boston, Role of the Doctor in Atomic Defense.
Cecil J. Watson, Minneapolis, An Approach to the Bedside Diagnosis of Jaundice.
Frank Hinman, San Francisco, Endocrine Tumors of the Testis.
Harold W. Dargeon, New York, Cancer in Childhood.
Alfred W. Adson, Rochester, Minn., Pains of the Face; Diagnosis and Treatment with Special Emphasis on the Major Neuralgia.
Harris B. Shumacker Jr., Indianapolis, Recent Developments in Vascular Surgery.
Andrew C. Ivy, Chicago, Physiologic Aspects of Peptic Ulcer.
Foster S. Kellogg, Boston, Hemorrhagic Conditions in the Second Half of Pregnancy.
C. Allen Good, Rochester, Minn., Roentgenologic Diagnosis of Surgical Lesions of Mediastinum.
Arthur C. Curtis, Ann Arbor, Mich., Syphilis: Modern Treatment.
Nathan A. Womack, Iowa City, Benign Lesions of the Breast.
Hedwig S. Kuhn, Hammond, Ind., Developments in Industrial Ophthalmology.
Carl E. Badgley, Ann Arbor, Mich., The Herniated Intervertebral Disk.
Derrick Vail, Chicago, Eye Changes Commonly Seen in General Practice.
Archie L. Dean, New York, Symptoms and Prompt Diagnosis of Tumors of the Genitourinary Organs.
S. Spafford Ackerly, Louisville, Ky., Problem of the Adolescent.
Archibald L. Hoyne, Chicago, Recognition of Poliomyelitis in Its Early Stage.
Theodore E. Woodward, Baltimore, Clinical Applications of Chloramphenicol (Chloromycetin®).
Henry W. Cave, New York, Surgical Lesions of the Colon.
Yale Kneeland Jr., New York, The Newer Antibiotics.
Fremont A. Chandler, Chicago, Colles Fracture.

At the close of each day's program beginning Wednesday a panel discussion will be held; subjects are as follows: What's New in Medicine and Surgery, Compound "E" and "ACTH" and Obstetrics, Gynecology and Urology.

KENTUCKY

Dr. Underwood Reelected.—Dr. Bruce Underwood, Louisville, was reelected to a four year term as state health commissioner and secretary of the state board of health at the meeting of the board in Frankfort January 3. Board members reappointed by Governor Earle C. Clements are Drs. William H. Fuller, Mayfield; Finis M. Travis, Frankfort, and C. B. Davis, Ph.D., Louisville. The eight members of the board appointed by the governor elect a ninth member, who serves as state health commissioner and secretary of the board.

LOUISIANA

Baton Rouge General Hospital.—The new $2,885,000 Baton Rouge General Hospital began accepting its first patients January 30. The new hospital has been under construction for about four years because of shortage of materials and rising building costs that necessitated a second financial drive. The five story 274 bed institution is designed to permit further expansion. It will house a poliomyelitis clinic and a rehabilitation center for the physically disabled.

New Orleans Graduate Assembly.—The New Orleans Graduate Medical Assembly will hold its annual meeting March 6-9, with headquarters at the Municipal Auditorium. Lectures, clinics, symposiums, clinicopathologic conferences, technical exhibits and three round table luncheons are scheduled. Guest speakers include: Drs. Stuart C. Cullen, Iowa City; Francis W. Lynch, St. Paul; Moses Paulson and Emil Novak, Baltimore; John L. Parks, Washington, D. C.; W. Barry Wood Jr. and Theodore E. Walsh, St. Louis; H. Houston Merritt, New York; William Dameshek and Parker Heath, Boston; Walter G. Stuck, San Antonio, Texas; William Boyd, Toronto, Canada; William J. Orr, Buffalo; William J. Dieckmann, Chicago; John D. Camp and O. Theron Clagett, Rochester, Minn.; Carl A. Moyer, Dallas, Texas, and Reed M. Nesbit, Ann Arbor, Mich. The registration fee is $15. Applications to join the postclinical tour to islands in the Carribbean, March 11-26, should be sent immediately to the assembly, 1430 Tulane Avenue, New Orleans 12.

MASSACHUSETTS

Radio Programs on Preventive Medicine.—The faculties of the medical schools of Boston University, Harvard and Tufts, all of Boston, have joined forces to present a 26 week series of educational radio programs on preventive medicine, entitled "A Long Life." Actual case histories of the diseases which most affect communities today are subjects of the programs broadcast each Tuesday at 10 p. m. over stations WCOP and WCOP-FM. The series is under the sponsorship of the Lowell Institute, working in cooperation with the Boston University School of Medicine, Massachusetts Institute of Technology, Northeastern and Tufts.

Lecture on Public Health Personnel.—Dr. William P. Shepard, San Francisco, third vice president of the Metropolitan Life Insurance Company and president-elect of the American Public Health Association, will deliver the Delta Omega Lecture on February 13 at the Harvard School of Public Health, Boston, on "The Training and Recruitment of Professional Public Health Personnel." Dr. Shepard has served since 1939 as chairman of the Committee on Professional Education of the American Public Health Association. The Delta Omega Lecture is sponsored by the Beta Chapter of Delta Omega, the Harvard School of Public Health chapter of the national honorary scholastic society in public health.

MICHIGAN

Witwer Memorial Lecture.—The first Witwer Memorial Lecture will be given February 14 at 8 p. m. in the auditorium of the Pierce Junior High School in Grosse Pointe. Kenneth E. Corrigan, Ph.D., research physicist of Harper Hospital, will speak on "Radiation in the Diagnosis and Treatment of Disease." The lecture was recently established by the staff of Bon Secours Hospital, Grosse Pointe, in memory of Dr. Eldwin R. Witwer, who organized the department of roentgenology. He died Nov. 2, 1948.

Dr. Scott Is Dean at Wayne University.—Gordon H. Scott, Ph.D., was named dean of the Wayne University College of Medicine, Detroit, on January 10. He has been identified with medical education since 1926. After serving on the medical faculty at Loyola University in Chicago and on the staff of the Rockefeller Institute for Medical Research, he was appointed to the faculty of the Washington University School of Medicine in St. Louis in 1928. Dr. Scott came to Wayne University in 1945 from the position of head of the department of anatomy at the University of Southern California School of Medicine. He is a fellow of the American Association for the Advancement of Science and a member of the American Association of Anatomists, American Society of Zoologists, Society for Experimental Biology and Medicine, Detroit Surgical Association and Sigma Xi.

MISSOURI

Washington University Medical School Anniversary.—Washington University, St. Louis, will celebrate the fiftieth year of continuous operation of its School of Medicine February 21. Ceremonies for laying the cornerstone for the new Cancer Research Building will be conducted at 2 p. m. The speakers will be Mr. Harry Brookings Wallace, president of the Corporation of Washington University and Dr. Leonard A. Scheele, Washington, D. C., Surgeon-General, U. S. Public Health Service. The following program will be presented in the auditorium of school of medicine, beginning at 2:30 p. m.:

Ernest W. Goodpasture, Nashville, Tenn., Research on Infectious Diseases.
Charles Huggins, Chicago, Significance of the Reactive Groups of Proteins in Diagnosis.
Edward A. Park, Baltimore, Bone Growth.

About 500 persons are expected to attend the anniversary dinner at the Chase Hotel at 7:30 p. m. Dr. Alan Gregg, director, Division of Medical Sciences, the Rockefeller Foundation, New York, will be the speaker. The Washington University School of Medicine was formed in 1899 with the merger of the old Missouri Medical College and the St. Louis Medical College, which at that time was the medical department of Washington University. In 1910 new heads and staffs were appointed in all major departments in an extensive reorganization.

NEW YORK

Postgraduate Instruction.—A postgraduate lecture has been arranged for the Utica Academy of Medicine meeting at the Hotel Utica February 16 at 8 p. m., when Dr. Lawrence Miscall of New York will speak on "Chest Trauma." The Geneva Academy of Medicine will hear a postgraduate lecture at a meeting in the Bellhurst, Geneva, February 20, at 8:30 p. m. Dr. Charles A. Ragan Jr., New York, will speak on "Clinical Aspects with the Use of Cortisone, ACTH and Other Steroids in Rheumatic Disease."

New York City

Ward Teaching Program.—New York City Hospital, Welfare Island, announces a practical ward teaching program under the direction of Dr. Carl Reich. It is free to members of the medical profession and extends from February 1 to May 1. All phases of internal medicine will be covered.

Fifth Harvey Lecture.—Dr. Harland G. Wood, professor of biochemistry and chairman of the department, Western Reserve University, Cleveland, will deliver the fifth Harvey Lecture of the current series at the New York Academy of Medicine February 16 on "Some Investigations of Metabolism with Carbon Isotopes."

Broadcast Scientific Meetings.—The New York Academy of Medicine on January 18 introduced its first FM broadcast of a medical meeting at the academy building. The New York Academy of Medicine is said to be the first medical organization to open its scientific sessions to the entire medical profession through the channels of frequency modulation. Dr. Norton S. Brown is chairman of the FM Committee of the academy.

Report on Health in 1949.—The Municipal Department of Health in its 1949 report listed a record low general death rate of 9.6 per 1,000 population. This was the second year in which the city's general death rate fell below 10.0; in 1941 it was 9.9. The departments of health and hospitals in cooperation with the state department of health and the U. S. Children's Bureau has in operation at New York Hospital a course for training pediatricians and nurses to meet the special problems in caring for prematurely born infants. It is the first such training course in the country, according to the report. Diphtheria continued its downward trend, with 128 cases and 2 deaths reported in the first 11 months of 1949; this is the lowest number of cases and deaths in the history of the city. There was an increase in the number of cases of whooping cough, with 4,136 cases and 13 deaths reported. There was an increase over 1948 in the reported cases of German measles; there were 2 deaths from mumps in 1949. During the year 93 cases of rickettsialpox were reported, 1 case of Rocky Mountain spotted fever, 2 cases of typhus, 1 case of psittacosis, 4 cases of tetanus, 1 case of tularemia and 10 new cases of undulant fever. One of the tetanus cases was fatal. An increase of 536 newly reported cases of tuberculosis in the first 11 months of 1949 was reported

in the total 8,424 new cases. As of December 1 there had been 2,397 cases of poliomyelitis with 184 deaths since Jan. 1, 1949, a case rate of 29.4 per 100,000 population. Poliomyelitis patients were cared for in 30 hospitals. As in previous epidemics more males (58 per cent) than females were stricken.

A total of 291,902 persons were examined in mass x-ray surveys conducted at 200 different field locations and in clinics of the health centers. In January 1949 the Division of Nutrition was raised to the status of a bureau with a physician as director. Three new nutrition clinics have been opened, and progress has been made in the development of a prenatal nutrition program.

GENERAL

American Goiter Association.—The annual meeting of this association will be held at the Shamrock Hotel, Houston, Texas March 9-11. The program will consist of papers, dry clinics and demonstrations. The presidential address will be given by Dr. Samuel F. Haines, Rochester, Minn., on "Influence of Research on the Modern Treatment of Exophthalmic Goiter."

Tom Carroll Is Dead.—Mr. Tom Carroll, representative of the W. F. Prior Company, Inc., of Hagerstown, Md., and from 1913 until 1921 Chicago representative for the D. Appleton Company and the Oxford University Press, died in December, aged 63. Mr. Carroll's father had been a book salesman, and on his death in 1913 the son took over his father's territory. Tom Carroll was known and admired by a great number of physicians throughout the United States.

Integration of Health Services for Disaster Control.—Dr. Charles E. Smith, director of the School of Public Health at the University of California, Berkeley, is giving a course at the Berkeley Campus on "Military-Civil Integration of Health Service for Disaster Control." Among the numerous phases of the problem under consideration in this course are: "What agencies should prepare to avert disasters or organize the community for response to a disaster?", "What is the state of readiness of the United States for successful response to disaster?" "What time factors are involved?" "Do we have sufficient trained manpower to achieve disaster control from the health viewpoint?" "What are the military responsibilities in disaster control?"

Doctors Spies and Williams Receive Cuban Award.—Dr. Tom D. Spies, professor of nutrition and metabolism and chairman of the department at Northwestern University Medical School, Chicago; and Robert R. Williams, Sc.D., formerly chemical director of the Bell Telephone laboratories in New York, received the Orden de Carlos Manuel de Cespedes decoration, highest award of the Cuban government, January 23 at ceremonies in Havana. Dr. Spies was honored for his contribution to the field of nutritional deficiency diseases. Dr. Williams is best known for his work in isolating vitamin B_1 and producing it synthetically. The Orden de Carlos Manuel de Cespedes decoration was created in 1926 in honor of Carlos Manuel de Cespedes, first president of Cuba. It is given to a Cuban or a foreigner who has done outstanding work of a humanitarian nature for the Cuban people.

Meetings on Mosquito Control.—The American Mosquito Control Association is to hold its annual meeting at the Cavalier Hotel, Virginia Beach, Va., on February 23-24. The Virginia Mosquito Control Association will meet conjointly with the association. The program includes a diversity of topics, from a description of technics in the study of mosquitoes to the various types of control practiced by the Army, Navy, U. S. Public Health Service and the Department of Agriculture, as well as by state and county organizations. Experts in preventive medicine, including several from South American Countries, will speak. An inspection trip covering activities in and around Washington and the Agricultural Research Center at Beltsville, Md., is planned for February 21. The following day an automobile cavalcade will proceed to Virginia Beach for a meeting; the group will proceed from Virginia Beach, to Atlantic City, where the annual meeting of the New Jersey Mosquito Extermination Association will be held on March 1-3. En route points of interest, including a number of mosquito control projects, will be visited. Details of the meeting can be obtained from Mr. R. E. Dorer, Room 204, Essex Building, Norfolk, Va.

Cancer Society Clinical Fellowships.—The American Cancer Society's program of clinical fellowships will continue through the next hospital training year, July 1, 1950-June 30, 1951. Fellowships will be made available primarily to teaching institutions approved by the Council on Medical Education and Hospitals of the American Medical Association. Applications must be filed by February 15. Letters of application may be sent to Brewster S. Miller, M. D., American Cancer Society, 47 Beaver Street, New York 4.

The fellowships are established to create opportunities for young physicians of promise to attain high degrees of competence in the diagnosis and treatment of cancer. Hospitals desiring to offer training in categories which provide major emphasis on cancer must apply to the medical and scientific director of the American Cancer Society for fellowships. Applicants for the fellowships shall (1) be graduates of class A medical schools of the United States, its territories and of Canada; (2) be not over 40 years of age on the next birthday following commencement of fellowship tenure and be citizens of the United States; (3) have completed one year of postgraduate training (exclusive of internship) with the intent to fulfil eligibility requirements for certifying examinations by an approved Medical Specialty Board, and (4) conform in other respects to requirements of the institution to which he applies. No fellowship training shall exceed a total of three years. The stipend is $3,600 per year. Semiannually the fellow must submit to the American Cancer Society a brief statement of work accomplished during the period covered in the report. A list of approved institutions may be obtained from the national office of the American Cancer Society.

Grants by National Foundation.—The National Foundation for Infantile Paralysis announces that 29 additional research and educational projects in infantile paralysis, totaling $849,738.68 in March of Dimes funds, have been awarded to scientific and technical institutions throughout the United States and Canada. These additional studies bring the total expended by the National Foundation since 1938 to more than $11,000,000 each in the fields of research and education. Recently approved research study grants include $28,000 to the Children's Hospital in Boston for improving methods for "in vitro" propagation of poliomyelitis virus in non-nervous tissue; $49,300 to the University of California in San Francisco for further development of the flocculation method for virus identification and diagnosis of the disease; $28,990 to the University of Toronto in Toronto for studies on prevention of the disease with high titer poliomyelitis antiserums; $42,350 to Stanford University in San Francisco for studying the pathogenesis of poliomyelitis in the central nervous system; $26,000 to the University of Chicago for determining the origin of phosphorus and nitrogen in the virus; $25,480 to Western Reserve University in Cleveland for determination of the chemical differences between nerve cells that are resistant to the virus as compared with those that are susceptible, and $28,370 to the University of Wisconsin to determine the influence of nutrition on susceptibility and resistance to poliomyelitis. Also approved is an appropriation to provide fellowships of three to six months in principles of physical medicine and rehabilitation for physicians who are certified by or are preparing to meet the requirements of specialty boards in neurology, orthopedics, pediatrics and internal medicine. Information concerning the fellowship programs can be obtained from the Educational Division of the National Foundation for Infantile Paralysis, 120 Broadway, New York 5.

CORRECTION

Public Health Bulletin No. 305.—The second paragraph in the second item in the Washington Letter in THE JOURNAL Jan. 7, 1950, page 37, is misplaced. It should have been the last paragraph of the first item (Estimate of Number of Physicians Required) in this letter. Public Health Bulletin No. 305, which is mentioned therein, pertains to the distribution of physicians, and not to "Shielding Requirements Against Radiation."

Marriages

WILLIAM WONN KRIPPAEHNE, Puyallup, Wash., to Dr. Marion Carolyn Larsen of Seattle, November 19.

ROBERT MURRAY PAULLING JR., Mount Pleasant, S. C., to Miss Marcia James of Easley, October 1.

EDWARD L. FRAZELL, New York, to Miss Mary Katherine Duffy at Rochester, N. Y., November 26.

JOSEPH MORGAN JACKSON JR., Folkston, Ga., to Miss Anne Lewis of Waycross, November 26.

WAYNE CARTER BRADY to Miss Billie Dove Koon, both of Columbia, S. C., December 16.

ROBERT JEAN CAMPBELL III to Miss Patricia Rinehart, both of New York, November 26.

Deaths

Augustus Adolph Eahner ● Philadelphia; born in Memphis, Tenn., Nov. 17, 1862; Jefferson Medical College of Philadelphia, 1888; formerly professor of clinical medicine at the Philadelphia Polyclinic and College for Graduates in Medicine; at one time chief clinical assistant in the outpatient department of Jefferson Medical College Hospital; for many years held various posts at the Orthopedic Hospital and Infirmary for Nervous Diseases, the Hospital for Diseases of the Lungs, Philadelphia General Hospital and Mercy Hospital; served during World War I; fellow of the College of Physicians of Philadelphia and American Association for the Advancement of Science; member of the Franklin Institute, the Pennsylvania Museum and School of Industrial Art, the Science League of America, the Historical Society of Pennsylvania, the Academy of Natural Sciences of Philadelphia, the Philadelphia Zoological Society, the Pennsylvania Academy of Fine Arts, the Valley Forge Historical Society and the Fairmount Park Art Association; assistant editor, 1893-1899, of the *Philadelphia Medical Journal*; associate editor from 1904 to 1922 of the *Pennsylvania Medical Journal*; co-author of "Medical Diagnosis"; author of "Handbook of Fevers" and the editor-translator of American editions of several medical and medical science books; died December 20, aged 87.

William Henry Harrell III ● Medical Director, U. S. Navy, Portsmouth, Va.; born in Williamston, N. C., March 6, 1895; University of Pennsylvania School of Medicine, Philadelphia, 1918; appointed assistant surgeon in the Naval Reserve Force in 1918 immediately after graduation and was on active duty at the Naval Hospital, Philadelphia, until May 1919; in 1921 was commissioned lieutenant in the medical corps of the regular navy and was later promoted through the various grades to the rank of captain, in 1942; in 1922 served with the First Brigade of the Marine Expeditionary Force in Haiti and aboard the *USS Denver* during operations in the Second Nicaraguan Campaign; during World War II served aboard the *USS Relief* and *USS South Dakota*; also at the Naval Hospital, San Diego, Calif., and the Submarine Chaser Training Center at Miami, Fla.; in June 1945 became the medical officer in command of Fleet Hospital No. 116 in Guam; in 1949 assumed command of the Naval Hospital, Portsmouth, where he died December 20, aged 54, of carcinoma of the lung.

George Burgess Foster Jr. ● Brigadier General, U. S. Army, retired, Cambridge, Mass.; born July 27, 1884; Jefferson Medical College of Philadelphia, 1907; honorary graduate of the Army Medical School, 1910; graduated at Medical Field Service School, 1921; doctor of public health, Harvard University, 1917; fellow of the American College of Physicians; entered the medical corps of the U. S. Army as a first lieutenant on June 20, 1910; rose through the various ranks to that of colonel in 1936; served during World Wars I and II; awarded the Legion of Merit from this country and the Legion of Honor from France; formerly commanding officer of O'Reilly General Hospital in Springfield, Mo.; in 1945 was awarded an engraved bronze plaque by the Springfield chamber of commerce as the "man of the year" for his activities in coordinating the welfare of the hospital with that of the community; retired Aug. 31, 1946, with the rank of brigadier general; medical director of the Cambridge City Hospital, where he died December 31, aged 65, of coronary thrombosis.

Howard Sheffield Jeck ● New York; born in Nashville, Tenn., March 24, 1883; Vanderbilt University School of Medicine, Nashville, 1909; associate professor of clinical surgery (urology) Cornell University Medical College and professor of urology at the New York Polyclinic Medical School and Hospital; specialist certified by the American Board of Urology; member of the American Association of Genito-Urinary Surgeons and American Urological Association; fellow of the American College of Surgeons; past president of the Bellevue Alumni Association; affiliated with Dobbs Ferry (N. Y.) Hospital, Good Samaritan Hospital, Suffern, Nyack (N. Y.) Hospital, Rockland State Hospital, Orangeburg, St. John's Hospital, Brooklyn, White Plains (N. Y.) Hospital, Bellevue Hospital and New York Polyclinic Hospital; served on the staff of the New York Hospital, where he died December 29, aged 66, of cerebral hemorrhage.

Preston Kyes, North Jay, Maine; born in North Jay, Jan. 24, 1875; Johns Hopkins University School of Medicine, Baltimore, 1900; joined the faculty of the University of Chicago School of Medicine in 1902, in 1918 became professor of preventive medicine and in 1940 professor emeritus; fellow of the Rockefeller Institute for Medical Research, New York, from 1902 to 1905; associate in the Chicago Memorial Institute for Infectious Diseases from 1904 to 1909 and Royal Prussian Institute of Experimental Therapy at Frankfort-on-the-Main, Germany, from 1901 to 1905; formerly editor of the University of Chicago's "Scientific Series" of technical publications; member of the American Medical Association and the American Association of Pathologists and Bacteriologists; on the staff of the Franklin County Memorial Hospital, Farmington; trustee of the Niles Memorial Library; died December 27, aged 74, of cerebral hemorrhage.

Abraham Joseph Cohen ● Philadelphia; born in Lomza, Poland, Dec. 14, 1879; Jefferson Medical College of Philadelphia, 1903; clinical professor of medicine at the Temple University School of Medicine; specialist certified by the American Board of Internal Medicine; member of the American College of Chest Physicians and the American Trudeau Society; chairman of the tuberculosis committee of the Philadelphia County Medical Society; served as chief of the tuberculosis division of the city department of public health; for many years affiliated with the Henry Phipps Institute; medical director of the Eagleville (Pa.) Sanatorium for Consumptives, of which he had been a founder; served on the staffs of the White Haven (Pa.) Sanatorium, Jewish Hospital, State Hospital, in Norristown, and the Philadelphia General Hospital; died in the Temple University Hospital, December 30, aged 70, of myocardial infarction.

Edwin Fauver, Rochester, N. Y.; born in North Eaton, Ohio, in 1875; Columbia University College of Physicians and Surgeons, New York, 1909; instructor in medicine at the University of Rochester School of Medicine and Dentistry; joined the faculty of the University of Rochester in 1916 as professor of hygiene and physical education and college physician from 1921 to 1945, when he became professor of hygiene and physical education, emeritus; professor of hygiene and physical education, college physician and instructor in physical education, Swarthmore (Pa.) College from 1909 to 1911; assistant professor of hygiene and physical education and medical examiner, Princeton (N. J.) University from 1911 to 1916; member of the American Medical Association; died in Sarasota, Fla., December 17, aged 74, of acute cardiac dilatation and diabetes mellitus.

Clarence Goolsby Cox, Milledgeville, Ga.; born in Ellijay, Ga., Dec. 18, 1886; University of Georgia Medical Department, Augusta, 1910; member of the American Medical Association, American Psychiatric Association, Southeastern Neurological and Psychiatric Association and Atlanta Society of Neurology and Psychiatry; served during World War I; superintendent of the Georgia Training School for Mental Defectives in Gracewood for a short period; formerly chief of neuropsychiatry at the Veterans Administration Hospital in Dublin; clinical director and for many years on the staff of the Milledgeville State Hospital, where he died December 2, aged 62, of accidental carbon monoxide poisoning.

Robert Glen Urquhart ● Norwich, Conn.; born in Revelstoke, British Columbia, in 1899; McGill University Faculty of Medicine, Montreal, Canada, 1924; member of the American Association for Thoracic Surgery; past president of the New London County Medical Association; fellow of the American College of Surgeons; served with the Canadian Expeditionary Force overseas during World War I; consulting thoracic surgeon, William W. Backus Hospital, in Norwich, Hartford and St. Francis hospitals, in Hartford, and St. Joheph's Hospital, Providence, R. I.; for many years on the staff of the Norwich State Tuberculosis Sanatorium; died December 9, aged 50.

Daniel Joseph Geary ● Morristown, N. J.; born in South Plainfield, N. J., Feb. 19, 1903; Georgetown University School of Medicine, Washington, D. C., 1927; past president of the Morris County Medical Society; member of the Society of Surgeons of New Jersey; fellow of the American College of Surgeons; member of the Maternal Welfare Commission of New Jersey; specialist certified by the American Board of Obstetrics and Gynecology; director of the obstetrical department and past president of the medical board, All Souls' Hospital; died in the New England Baptist Hospital, Boston, December 21, aged 46, of cirrhosis of the liver.

Samuel Frederick Mullins ● Danbury, Conn.; University and Bellevue Hospital Medical College, New York, 1905; fellow of the International College of Surgeons, of which he was Connecticut vice regent, and the American College of Surgeons; past president of the Danbury Medical Society and the Fairfield County Medical Society; formerly councilor of the Connecticut State Medical Society; president-elect of the Society of Bellevue Hospital Alumni of New York; consulting surgeon for the Southbury (Conn.) Training School; affiliated with Danbury Hospital, where he died December 18, aged 66.

● Indicates Fellow of the American Medical Association.

Nathan Davis McDowell ● Rochester, N. Y.; Bellevue Hospital Medical College, New York, 1897; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; past president of the Rochester Academy of Medicine and the Rochester Pathological Society; affiliated with the Rochester General and Park Avenue hospitals; consulting laryngologist at the Iola-Monroe County Tuberculosis Sanatorium; laryngologist and aurist to the Rochester School for the Deaf; died December 25, aged 77.

Thomas Adams ● Cleveland; Trinity Medical College, Toronto, Ontario, Canada, 1901; affiliated with St. Alexis Hospital; died November 17, aged 73, of lobar pneumonia and cardiac hypertrophy.

Marion Samuel Adler ● New York; Long Island College Hospital, Brooklyn, 1901; affiliated with the Gouverneur Hospital; died in Tarrytown November 9, aged 73, of carcinoma of the cecum.

William Edward Alleger, Pittsford, Mich.; Detroit Homeopathic College, 1909; past president of Hillsdale County Medical Society; affiliated with the Hillsdale Community Health Center; died December 4, aged 72, of heart disease.

Hezekiah Butcher Anderson, Shawhan, Ky.; University of Louisville (Ky.) Medical Department, 1910; member of the American Medical Association; died recently, aged 69.

James Oscar Baker ● Savannah, Ga.; University of Georgia Medical Department, Augusta, 1902; also a graduate in pharmacy; died in Candler Hospital December 6, aged 82, of heart disease and arteriosclerosis.

Pliny C. Barnard ● Parker, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1901; an Associate Fellow of the American Medical Association; died December 15, aged 81.

Perry Amidon Bly, Atlanta, Ga.; University of Pennsylvania Department of Medicine, Philadelphia, 1900; served on the staffs of Rochester Municipal Hospital and Iola-Monroe County Tuberculosis Sanatorium in Rochester, N. Y.; died in St. Joseph's Infirmary December 6, aged 74, of miliary tuberculosis.

William Felice Borrelli, Chicago; Bennett Medical College, Chicago, 1905; served on the staff of the Veterans Administration Hospital at Hines, Ill.; died December 9, aged 69, of coronary occlusion.

Oscar S. Brown, Oceanside, Calif.; Starling Medical College, Columbus, 1885; at one time vice president of the Arizona State Board of Medical Examiners; formerly affiliated with the Santa Fe Hospital in Winslow, Ariz.; died in Los Angeles December 6, aged 91.

Titus Bull, New York; Bellevue Hospital Medical College, New York, 1894; died December 4, aged 78, of embolism.

Barry Hovey Burgess, Boston; Harvard Medical School, Boston, 1918; formerly member of the Massachusetts Eye and Ear Infirmary; died in the City Hospital December 17, aged 61.

James Willoughby Burton, Van Nuys, Calif.; College of Medical Evangelists, Loma Linda and Los Angeles, 1933; member of the American Medical Association; certified by the National Board of Medical Examiners; specialist certified by the American Board of Pediatrics; served on the staffs of St. Joseph's Hospital, in Burbank and White Memorial and Children's hospitals in Los Angeles; on the staff of the Valley Hospital, where he died December 19, aged 40.

Clarence Prentice Cartwright, Hughesville, Mo.; St. Louis College of Physicians and Surgeons, 1891; served during World War I; died in Little Rock, Ark., December 13, aged 81.

Okey Johnson Casto, Parkersburg, W. Va.; Maryland Medical College, Baltimore, 1902; member of the American Medical Association and the Parkersburg Academy of Medicine; affiliated with St. Joseph's Hospital and Camden-Clark Memorial Hospital, where he died December 29, aged 69, of coronary occlusion.

Jackson T. Colvin ● Jesup, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1903; chairman of the school board; formerly senior partner of the Colvin-Ritch Hospital; died in the Ritch-Leaphart Hospital December 8, aged 69, of coronary heart disease.

Arthur John Cox, Arlington, Texas; Louisville (Ky.) Medical College, 1904; died December 15, aged 81.

Joseph Benjamin Crawford, Chattanooga, Tenn.; Jefferson Medical College of Philadelphia, 1941; interned at the Grady Hospital in Atlanta; served during World War II; died December 20, aged 33.

James Edgar Crossman ● Canisteo, N. Y.; Syracuse University College of Medicine, 1910; retired health officer of Canisteo and county coroner; served during World War I; died in the Bethesda Hospital, Hornell, November 29, aged 68.

Harry Benjamin Culver, Denver; the Hahnemann Medical College and Hospital, Chicago, 1919; member of the American Medical Association; for many years police surgeon; died December 20, aged 64, of acute coronary thrombosis.

William Edward Dale, Louisville, Ky.; University of Louisville (Ky.) Medical Department, 1891; died December 18, aged 82.

Roy Hamilton Davis, Monson, Mass.; Ohio-Miami Medical College of the University of Cincinnati, 1912; member of the American Medical Association, Ohio State Medical Association and the American Urological Association; at one time practiced in Dayton, Ohio, where he was on the staff of the Miami Valley Hospital; died recently, aged 69, of coronary thrombosis.

Allan Wilson Dawson ● Colonel, M. C., U. S. Army, San Francisco; Jefferson Medical College of Philadelphia, 1916; served during World Wars I and II; entered the medical corps of the U. S. Army as a first lieutenant in 1917; died November 12, aged 60, of coronary occlusion.

Anna Earl Hutchinson Delacroix, Hartsdale, N. Y.; Niagara University Medical Department, Buffalo, 1895; for many years associated with the Manhattan State Hospital in New York; died December 26, aged 79.

Daniel Joseph Donnelly ● Philadelphia; Temple University School of Medicine, Philadelphia, 1906; formerly assistant professor of medicine at his alma mater; served during World War I; associated with the Samaritan Hospital and the Temple University Hospital, where he died December 20, aged 74, of cerebral arteriosclerosis and Parkinson's disease.

George Robert Dunn, Minneapolis; Johns Hopkins University School of Medicine, Baltimore, 1914; clinical assistant professor of surgery at the University of Minnesota Medical School; fellow of the American College of Surgeons; served as president of the Minneapolis Surgical Society; on the staff of Northwestern Hospital; died December 11, aged 62, of coronary disease.

Samuel Abraham Durr, San Diego, Calif.; Northwestern University Medical School, Chicago, 1918; member of the American Academy of Ophthalmology and Otolaryngology and the American Medical Association; specialist certified by the American Board of Ophthalmology; certified by the National Board of Medical Examiners; affiliated with Scripps Memorial Hospital, La Jolla and Mercy and San Diego County General hospitals; died December 4, aged 55, of coronary thrombosis.

Joseph Pugh Eidson, New York; Johns Hopkins University School of Medicine, Baltimore, 1916; formerly assistant professor of clinical psychiatry at the Cornell University Medical College; specialist certified by the American Board of Psychiatry and Neurology; served during World War I; assistant physician and director of the laboratory at Bloomingdale Hospital, White Plains, N. Y.; formerly on the staff of New York Hospital; died in La Jolla, Calif., December 8, aged 61, of coronary thrombosis.

Loren Ferrell Elliott ● Albuquerque, N. Mex.; St. Louis University School of Medicine, 1919; past president of the Bernalillo County Medical Society; served during World War I; died December 12, aged 56, of essential hypertension and nephritis.

Marie Cowhick Esmond ● Santa Fe, N. M.; Kansas City (Mo.) Hahnemann Medical College, 1905; member of the Missouri State Medical Association; died December 14, aged 66.

Charles Kramer Farber, St. Petersburg, Fla.; Cleveland Homeopathic Medical College, 1902; member of the American Medical Association; died in the Mound Park Hospital December 6, aged 72, of congestive heart failure.

Joseph Webster Farrell ● Los Angeles; College of Physicians and Surgeons, Los Angeles, 1919; on the staffs of Queen of Angeles and French hospitals; died December 17, aged 54, of coronary sclerosis.

Deborah Fawcett, Newton, Mass.; Boston University School of Medicine, 1903; member of the American Medical Association; died December 31, aged 77.

Walter Irving Firey, Seattle; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1910; member of the American Medical Association; died December 18, aged 68.

Elias S. Frey, Louisville, Ky.; Kentucky School of Medicine, Louisville, 1894; member of the American Medical Association; died December 21, aged 84.

Bertrand Sydney Frohman ● Beverly Hills, Calif.; College of Physicians and Surgeons of San Francisco, 1920; joint author of "Brief Psychotherapy"; served as clinic physician at the Mount Zion Hospital in San Francisco and on the staff of the Cedar of Lebanon Hospital in Los Angeles, where he died December 12, aged 57, of cancer of the pancreas.

John Henry Frye, Danville, Ky.; Louisville National Medical College, Medical Department State University, 1905; died November 3, aged 74.

Frank H. Gardner, Moline, Ill.; College of Physicians and Surgeons of Chicago, 1893; for many years on the staff of Moline Public Hospital; died December 1, aged 85, of hypostatic pneumonia and carcinoma of the prostate.

Franklin Young Gates Jr., Las Vegas, Nev.; Temple University School of Medicine, Philadelphia, 1947; interned at Los Angeles County Hospital and St. Mark's Hospital in Salt Lake City; killed December 16, aged 32, in a plane crash thirty miles northwest of St. George, Utah.

Richard Reinoehl Gates, Drexel Hill, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1924; died December 13, aged 48.

Oliver Wendell Holmes Glover, Laurelton, Pa.; Jefferson Medical College of Philadelphia, 1891; member of the American Medical Association; for many years school director and trustee of the Laurelton State Village; medical examiner during World Wars I and II; served as director of the Mifflinburg Bank; died November 24, aged 81, of senility.

Albert Tobias Goldberg ● Fresno, Calif.; College of Physicians and Surgeons, medical department of the University of Southern California, Los Angeles, 1921; veteran of World War I; served as police surgeon and on the staff of the General Hospital of Fresno County; died December 20, aged 53, of coronary occlusion, hypertension and arteriosclerosis.

Ascher H. C. Goldfine ● Chicago; Chicago College of Medicine and Surgery, 1913; formerly on the faculty of Loyola University School of Medicine as assistant clinical professor of obstetrics and gynecology; member of the Central Association of Obstetricians and Gynecologists; specialist certified by the American Board of Obstetrics and Gynecology; on the staffs of the Henrotin Hospital and Mount Sinai Hospital, where he died December 29, aged 63, of acute myocardial infarction.

Richard Haworth Gollings ● Pittsburgh; Hahnemann Medical College and Hospital of Philadelphia, 1936; served during World War II; on the staff of Shadyside Hospital; died December 11, aged 43, of coronary disease.

Charles Martin Graham, Oakland, Calif.; University of Southern California College of Medicine, Los Angeles, 1908; died December 7, aged 75, of coronary thrombosis.

Mathew James Hammond, Watertown, S. D.; Drake University College of Medicine, Des Moines, 1905; member of the American Medical Association; fellow of the American College of Surgeons; affiliated with Luther Hospital; died December 9, aged 73, of hemiplegia.

John Achabod Hancks ● Wamego, Kan.; Barnes Medical College, St. Louis, 1904; died December 18, aged 75, of carcinoma of the prostate.

William Jacob Harned ● Charleston, Ill.; St. Louis University School of Medicine, 1916; affiliated with M. A. Montgomery Memorial Sanitarium; died December 8, aged 66, of coronary thrombosis.

Charles Frederick Harrison, Syracuse, Kan.; Rush Medical College, Chicago, 1896; for many years a member of the school board; bank director; died December 14, aged 75, of carcinoma of the liver.

Edwin A. Heller, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1895; member of the American Medical Association; affiliated with Stetson Hospital and Jewish Hospital, where he died December 24, aged 77.

B. Henderson Henry, Clinton, S. C.; Atlanta College of Physicians and Surgeons, 1913; affiliated with Hays Hospital; died December 10, aged 63, of coronary thrombosis.

Sheldon Argue Jackson, Olney, Ill.; Chicago Medical School, 1936; member of the American Medical Association; past president of the Richland County Medical Society; died December 11, aged 42, of acute coronary occlusion.

Haigazoon Kruger Kaprielian ● Old Greenwich, Conn.; University of Virginia Department of Medicine, Charlottesville, 1908; served in 1916 on the Mexican Border and later during World War I; died in Grace-New Haven Community Hospital, New Haven, December 18, aged 68, of hypertensive cardiovascular disease.

Irving Edmond Kaufman ● Chicago; Rush Medical College, Chicago, 1922; died in the Mount Sinai Hospital December 29, aged 52, of subacute glomerular nephritis and encephalomalacia.

William Charles Kintner ● Seattle; Louisville (Ky.) and Hospital Medical College, 1908; served overseas during World War I; died December 6, aged 64, of coronary thrombosis.

Paul Frederick Kistner, St. Louis; St. Louis University School of Medicine, 1914; assistant professor of clinical otolaryngology at his alma mater; affiliated with St. Mary's Group of Hospitals; died December 12, aged 60, of coronary heart disease.

Orwan Luther Latchford, Philadelphia; Medico-Chirurgical College of Philadelphia, 1903; member of the American Medical Association; died December 17, aged 75, of injuries received in an automobile accident.

Edward Charles McGehee ● Ashland, Ky.; Medical Department of Tulane University of Louisiana, New Orleans, 1910; died December 24, aged 63.

Arthur Thomas McGinty, San Jose, Calif.; Medical Department of the University of California, San Francisco, 1902; member of the American Medical Association; died November 3, aged 75, of cerebral thrombosis and hypertension.

James Edwin McManis ● Havensville, Kan.; Medico-Chirurgical College of Kansas City, 1902; died in the Holton (Kan.) Hospital December 11, aged 82, of injuries received in an automobile accident.

Albert Lee McNay, Pacific, Mo.; Barnes Medical College, St. Louis, 1897; member of the staff of St. Francis Hospital in Washington; died December 16, aged 76, of coronary embolism.

Selby Harold Marks ● Pittsburg, Calif.; University of California Medical School, San Francisco, 1913; past president of the Contra Costa County Medical Society; served during World War I; member of the school district board; member of the board of directors of Bank of America; at one time on the medical staff of the San Quentin Prison; first president of Pittsburg Community Hospital staff; died in the Peralta Hospital, Oakland, December 14, aged 59, of polycythemia vera.

Howard Steward Maupin ● Quincy, Ill.; University of Illinois College of Medicine, Chicago, 1914; served as captain with the British Army during World War I; affiliated with Blessing Hospital; died December 17, aged 59, of pulmonary tuberculosis and carcinoma of the lung.

Rollin Eugene May, Mount Sterling, Ky.; Kentucky School of Medicine, Louisville, 1898; served as county health director; died in the Mary Chiles Hospital December 17, aged 76, of arteriosclerosis and nephritis.

Katherine Martha Mayer ● Chicago; Rush Medical College, Chicago, 1917; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; affiliated with the Evangelical Hospital; died December 15, aged 62, of pulmonary embolism.

Floyd Hazard Moore, Herkimer, N. Y.; Albany Medical College, 1912; member of the American Medical Association; served during World War I; died December 12, aged 59.

Edward Martin Murphy, Lowell, Mass.; Tufts College Medical School, Boston, 1903; member of the American Medical Association; medical examiner for draft boards during World Wars I and II; affiliated with the Massachusetts Eye and Ear Infirmary; died December 1, aged 73, of cerebral hemorrhage.

George William Newman, Cassville, Mo.; M. B., University of Minnesota Medical School, Minneapolis, 1933; member of the American Medical Association; formerly mayor; medical director and owner of the Barry County Hospital and Clinic, where he died November 28, aged 49, of uremia.

Edwin Jones Nixon, Petersburg, Va.; University of Maryland School of Medicine, Baltimore, 1899; member of the American Medical Association; served during World War I; died in Petersburg Hospital December 9, aged 73, of cardiorenal disease and uremia.

Julius Leon Werner ● Philadelphia; Jefferson Medical College of Philadelphia, 1905; served as assistant professor of proctology at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania; specialist certified by the American Board of Surgery; member of the American Proctologic Society; affiliated with Mount Sinai Hospital, where he died December 11, aged 69.

Thomas Edward Wright ● Jefferson City, Tenn.; University of Louisville (Ky.) Medical Department, 1910; served in the medical corps of the British Army during World War I; affiliated with Jefferson Hospital; died December 11, aged 64, of angina pectoris.

Foreign Letters

LONDON

(From a Regular Correspondent)

Jan. 1, 1950.

Dangers of Antihistamine Drugs

Attention has been drawn to the potential dangers of the use of antihistamine drugs as cold cures. These drugs may cause drowsiness, giddiness or disorientation, particularly when taken without medical supervision. At present there are no restrictions on their sale, and, if drivers of cars and public transport are allowed to use the drugs indiscriminately, tragic results may follow.

At the same time the danger of small children finding and eating brightly colored sugar-coated pills is pointed out, and it is suggested that such tablets incorporate some bitter substance which, while not attractive to children, would not be too unpleasant to adults.

Trainee Specialists in National Health Service

The Department of Health for Scotland has issued a memorandum on the number of specialists, including senior hospital medical officers, employed by the Scottish regional boards in September 1949. At a later date it is intended to make a similar survey of appointments of "registrar" standard. The principal fact which arises from this is that there are unlikely to be more than 30 specialist appointments of all sorts per annum in Scotland, and these could be filled by approximately 300 registrars in training. Since the initial number of trainees entering on registrar appointments will be gradually reduced, it has been suggested that about 90 per annum should start this training to provide 30 potential specialists. These figures will be regarded with interest by all those in the "registrar" class, as there is a growing feeling that the present establishment of registrars is out of proportion to the number of specialists. Young men completing their training are finding it impossible to obtain appointments.

The British Medical Association has recently started a Registrars' Group, in which all trainees may air their problems and forward resolutions through their Regional Consultants Committee and directly to the Central Consultants and Specialists Committee for representation to the Ministry of Health. In England as well as in Scotland the problem of the relationship of numbers of trainee specialists to possible consultant (i. e., specialist) appointments is causing concern to trainees, to the many who have completed their training but are unable to obtain a specialist appointment and, indeed, to the whole profession.

Circumcision

Writing in the *British Medical Journal*, Dr. Douglas Gairdner of Cambridge reopens the attack on circumcision as a routine measure. He first produces pathologic evidence to show that the prepuce is incompletely developed in the newborn and separation from the glans, rendering it retractable, usually occurs between the ages of 9 months and 3 years. He maintains that the prepuce protects the glans during the period when the child is incontinent.

As regards the protection from penile cancer which is given by early circumcision, Gairdner maintains that one would give the same protection by keeping the prepuce and glans clean. Patients with penile cancer always seem to be of low intelligence, and many of them have ignored for long periods the precancerous states—filth and odoriferous discharges.

Psychotherapy and Music

At the meeting of the Section of Psychiatry of the Royal Society of Medicine on December 13, a discussion was held on the use of music in psychologic medicine. Dr. S. D. Mitchell reported the results of playing various types of music to groups of patients. Mozart produced mild serenity throughout the group, while Wagner's "Flying Dutchman Overture" evoked strong personal reactions and led to quarrelling about personal attitudes toward the love relationship.

Dr. Cunningham Dax exhibited paintings made by patients after they had listened to music. Dr. Yellowlees claimed that there was now a retrogressive movement in psychotherapy whereby the patient was regarded less as an individual and was being treated in a group.

Medical Certificates

The Report of the Safford Committee on Medical Certificates has now been published. This committee was set up two years ago to advise how it would be possible to reduce the number of certificates to be signed by medical practitioners and to improve and simplify the forms of certificates and the rules governing their issue. The committee states that the increasing demand of certificates is to the disadvantage of doctors and of their patients and suggests that the Ministry of National Insurance should provide, at the request of insured persons, extracts of certificates of incapacity which could be used for more general purposes, such as presentation to employers. It also suggests that there be more uniformity in the certificates and that many of the certificates at present in use (more than 50) might be simplified. The committee does not support the British Medical Association's plea that the diagnosis should not be stated specifically, but should be classified according to categories known to the doctor but not to the lay public.

SWEDEN

(From a Regular Correspondent)

BODDEN, Dec. 29, 1949.

The Nobel Festival

The annual Nobel festival on the anniversary of the death of Alfred Nobel, December 10, is one of the most brilliant festivals of Swedish literary and scientific life. As has been done for many years, it was held in the Concert House in Stockholm in the presence of members of the royal family, the diplomatic corps and a large number of Swedish officials and scientists. Three prize winners were present, Hideki Yukawa (physics), William Francis Giauque (chemistry) and Walter Rudolf Hess (medicine). The Nobel prize in medicine of this year was divided between Hess and Antonio Egaz Moniz, but Dr. Moniz was unable to attend. He received his prize later through the Swedish minister in Lisbon, Portugal. The winners were introduced to the audience with short speeches from members of the societies charged with the distribution of the prizes. At the end of each introductory speech the winner was asked to step down from the podium to receive the prize (a check and a diploma) from the hands of Crown Prince Gustaf Adolf. The medical prize winners were addressed by Dr. Herbert Olivecrona, professor of neurosurgery in Stockholm.

After the festival in the Concert House the Nobel Banquet was held in the Golden Hall of the Stockholm City Hall. On December 12 the prize winners attended a dinner given by King Gustav in the royal castle.

Importation of Austrian Physicians to Sweden

Swedish medical authorities are discussing a plan to import a number of foreign physicians to meet the need of hospital physicians, especially in surgical and psychiatric wards. Earlier inquiries from Austria indicate that Austria has an excess of physicians, and Austrian doctors are considered first for this importation. The plan has been proposed by the Chief of the Swedish State Medical Board, J. Axel Höjer, who is known as a supporter of the socialization of Swedish medicine. It has met many objections from the medical profession, but the Swedish Medical Association (Sveriges Läkarförbund) has consented to participate in a delegation which will go to Austria

in January 1950 to study Austrian medical education and other questions of importance. The medical course in Austria during World War II had to be shortened. Dr. Dag Knutson, head of the Swedish Medical Association, warns that care must be exercised for both our sake and the sake of Austrian colleagues. It is intended that about 75 surgeons, 75 psychiatrists and 15 pediatric psychiatrists be imported.

BELGIUM

(From a Regular Correspondent)

LIÈGE, Dec. 29, 1949.

Centers of Vocational Guidance

The collaboration of medicine and sociology has become once more a reality by the development of the centers of vocational guidance, in which medical examination is combined with the activities of social service. The psychomedicosocial centers have been established for a trial period of three years by the Minister of Public Education. The personnel of these centers includes: (*a*) a counselor in occupational guidance who must have a certificate of competence or a license in occupational guidance and selection; (*b*) an acting secretary who must hold a certificate of secondary study for a higher degree, a diploma for primary instructor or a diploma of secondary technical education and must possess special complementary training (pedagogy or occupational guidance); (*c*) a registered social worker and (*d*) a registered nurse. The organization also includes physicians. The medical corps has demanded that the physician should have charge of this service.

Campaign Against Infant Mortality

One of the most important factors in the campaign against infant mortality consists in the training of puericulturists who are efficient aids for the physician. The school of puericulture in Brussels, in the creation of which Queen Astrid played an important part, recently celebrated its fifteenth anniversary. On this occasion the Minister of Public Health expressed the recognition of the Belgian government to the school of puericulture for the aid it had given in the campaign against infant mortality. He expressed the hope that the number of students would be increased further, because there is need for thousands of competent puericulturists in the infant aid services and in the new puericulture and pediatric services which are to be created in Belgium.

Chronic Carbon Monoxide Poisoning

In certain industries in which combustion takes place, slow intoxication due to progressive absorption of carbon monoxide occurs. Mignolet has studied its pathologic aspects in *Médecin d'Usine* (Physician in the Factory). The symptoms which accompany repeated inhalation of small doses of carbon monoxide are subjective; they do not produce a clearly recognizable pattern, but the constancy of disturbance felt by the worker is such that it can be said that there is a triad of symptoms which often leads one to the diagnosis of carbon monoxide poisoning. This triad consists of asthenia, headache and vertigo.

The best prevention of carbon monoxide poisoning consists of technical measures to eliminate the source of intoxication, but they are practically impossible to realize. In view of excellent clinical results the author makes obligatory the determination of the carbon monoxide content in the workers of gas factories at the end of each working shift.

Vagotomy and Gastroduodenal Ulcer

At a session of the Belgian Society of Gastroenterology, Govaerts and Van Geertruyden presented the results of their experience with vagotomy in the treatment of gastroduodenal ulcer, a procedure introduced in 1943 by Dragstedt and Owens. Section of the vagus diminishes the secretion of an acid juice during the interdigestive phase. The technic of this section depends on the anatomy of the nerve, which has a variable number of anterior and posterior vagal trunks. The primary indication is peptic ulcer, then duodenal ulcer associated with gastroenterostomy. Vagotomy is contraindicated for gastric ulcer, because of the possibility of a neoplasm. Ten to 30 per cent of vagal sections are incomplete, which explains the relapses. Satisfactory results are obtained in 80 to 85 per cent of the cases and are comparable to those of gastrectomy. Relapses are observed in 3 to 4 per cent of cases, similar to results in gastrectomy; the mortality rate in vagotomy is between 1 and 2 per cent, which is lower than that in gastrectomy.

Mediastinal Tumors

Under the presidency of Debaisieux, the Third Congress of the Belgian Association of Surgery was held in Liège. Three topics were discussed: acute obstructions of the small intestine, by Howet and Beckers, tetralogy of Fallot, by Holmes Sellors of London, and tumors of the mediastinum, by Desaive and Dumont.

All benign mediastinal tumors are potentially malignant. It is rarely possible to establish with certainty the diagnosis of a mediastinal mass detected during radiologic observation, although it is possible in the majority of instances to establish the operability of a mediastinal neoplasm. Exploratory thoracotomy carried out under anesthesia with endotracheal intubation is relatively simple. In the presence of a mediastinal tumor of operable appearance it is necessary to resort as soon as possible to thoracotomy, to disclose the nature of the tumor and eventually to carry out the exeresis. The fact that a mediastinal tumor does not produce symptoms should not modify this procedure. The results obtained by early surgical treatment of benign and operable mediastinal tumors are encouraging and justify intervention.

BRAZIL

(From a Regular Correspondent)

SÃO PAULO, Nov. 24, 1949.

Intestinal Amebiasis

At a recent medical meeting held at Araxá, in the state of Minas Gerais, Dr. Paulo de Almeida Machado emphasized the need for a standard method for checking the cure of intestinal amebiasis. The lack of a widely accepted criterion is one of the main causes of the existing discrepancies in determining pathogenesis and therapy of intestinal amebiasis. At the Araxá medical convention Dr. Machado explained the various steps of the method used at the research institute under his direction, outlined as follows:

1. Stool examination—15, 30, 45 and 60 days after the end of the treatment. The stool is obtained after administration of a saline purgative on the fifteenth and on the forty-fifth day. The specimen—the whole stool whenever possible—is stored at room temperature and examined within two hours after the feces have been passed. Macroscopic examination is made to select the portions to be examined (at least three). Microscopic examination is made of a saline suspension, of a portion of the specimen stained by D'Antoni's solution, of an aqueous smear, of a hematoxylin-stained preparation and of six portions enriched by the zinc sulfate flotation method.

2. Sigmoidoscopy to obtain a specimen for the investigation of amebae, on the thirtieth day.

3. Clinical history of the patient. Emphasizing the danger of reinfestation, Dr. Almeida Machado stated that he does not extend the period of observation. He recognized the existence of carriers of Escherichia histolytica, even with typical amebic ulcerations without any suggestive symptoms of amebiasis and the existence of enterocolitis, the symptoms of which do not become attenuated after the eradication of the amebic infestation;

he referred especially to the need of a careful clinical and scientific spirit to judge clinical and parasitologic findings when determining the efficacy of antiamebic treatment.

Paget's Disease

The indication for use of testosterone propionate in Paget's disease (osteitis deformans) was pointed out by Dr. Sebastião Hermeto Jr. in a recent paper read before the Sociedade de Medicina e Cirurgia de São Paulo. He described the two fundamental processes in Paget's disease: the osteal reabsorption and the formation of new bone, which constitute the morphologic bone picture in this disease. He emphasized the action of the "male hormone" on the formation of new bone. Dr. Hermeto gave 150 mg. of testosterone propionate to two patients, both aged women, 10 mg. three or four times a week. The radiologic findings and functional improvement suggested a favorable response to this treatment.

Correspondence

ERLANGEN UNIVERSITY

To the Editor:—My attention has been called to a totally erroneous table of available beds at Erlangen University appearing in THE JOURNAL, Oct. 2, 1948, page 380. Inasmuch as Erlangen is at present the second largest university in all Germany, I would like to give the correct figures, which compare favorably with bed requirements for American teaching hospitals serving university medical schools.

For the sake of accuracy, and to rehabilitate much maligned German teaching facilities, the number of available beds at this university are as follows:

Internal medicine	366
General surgery, including urology and orthopedics	270
Gynecology and obstetrics	240
Dermatology and venereology	200
Psychiatry and neurology	200
Pediatrics	150
Otolaryngology	90
Ophthalmology	85
Dentistry	30

There is also a large state (county) mental hospital in Erlangen with additional teaching facilities. With the chairs of all branches occupied by experienced professors of high scientific qualification, Erlangen University is one of the leading and outstanding institutions of higher learning.

C. M. HASSELMANN, M.D.,
Professor, Erlangen University.

ED. NOTE.—Dr. Hasselmann's letter was submitted to Dr. Guttentag, whose comment follows:

To the Editor:—May I be permitted to compliment Dr. C. M. Hasselmann for the accuracy on the figures of the hospital beds available at Erlangen University. These figures correspond closely with those I gave (J. A. M. A. 138: 380 [Oct. 2] 1948), except for the beds available in dermatology and dentistry. In my computation, which was based on data of 1947, the total number of teaching beds available was 1,522. In Dr. Hasselmann's statement the total beds available are 1,629. The phrase "totally erroneous" is hardly warranted. I have been informed that additional facilities have been constructed since 1947. It should be added that German teaching facilities were not "maligned" in my paper.

OTTO E. GUTTENTAG, M.D.,
University of California
Medical School, Medical Center,
San Francisco.

"AND THE GOOD REMAINS"

To the Editor:—In Italy in the sixteenth century there was a rough, tough soldier by the name of Camillus. He was a roisterer and had been in and out of jail several times. He reformed and joined a religious order. He worked in one of the hospitals of Rome. There was an outbreak of dysentery among the babies of that city, and the death rate was appalling. The former soldier, later canonized St. Camillus, gathered up the sick in the highways and byways and brought them to his hospital. There they were bathed, given plenty of fresh air and fed goat's milk. The epidemic was stopped, and the mothers of Rome forever afterward sang songs of praise to St. Camillus. It was he who founded, in 1584, the first nursing order devoted exclusively to the care of the sick. It was during this period that he wrote, "If you wearily do a good thing, the weariness passes and the good remains."

The spirit of Christian sacrifice exemplified by this rough humanitarian of the sixteenth century is exactly that which has characterized the lives of our country practitioners since the very beginning of our nation. If physicians are regimented, is it not reasonable to assume that this flaming spirit will be extinguished?

JOHN J. RAINEY, M.D., Troy, N. Y.

CHEST EXAMINATION

To the Editor:—Your current comment on "Auscultatory Respiratory Murmur" (Dec. 24, 1949, page 1238) is very interesting. As students, we were taught the value of four cardinal chest physical examination procedures: (1) inspection, (2) palpation, (3) percussion and (4) auscultation. The literature fails to reveal a fifth procedure, which I have been using for years and which I term compression auscultation.

In the intermittans stage of asthma and bronchitis, rales are frequently inaudible. With the ear placed directly on the chest and by simultaneously compressing the chest anteriorly and posteriorly with the palms, while the subject inhales deeply with the mouth open, one can frequently detect rales. Even with negative roentgenography and the standard procedures, compression auscultation will elicit the rales.

It has a practical significance to insurance examiners, during the intermittans phase of asthma and bronchitis when an applicant may deny these illnesses, as well as to the patient and doctor who desire to know whether the bronchial tree has been involved when it is otherwise apparently normal.

DAVID L. ENGELSHER, M.D., New York 29.

ADDRESS OF CHAIRMAN OF SECTION ON OPHTHALMOLOGY

To the Editor:—Please note a correction in my address as chairman of the Section on Ophthalmology, appearing in THE JOURNAL (**141**:962 [Dec. 3] 1949). It stated therein, "In 1878 Dr. X. C. Scott of Ohio again presented the proposal, and it was adopted. Thus, the section came into being and had its first meeting as such in 1879, with about a dozen members. Dr. Bolling A. Pope of New Orleans was chairman and Dr. Eugene Smith of Detroit was secretary." It should read, "In 1878 Dr. X. C. Scott of Ohio again presented the proposal, and it was adopted. Thus, the section came into being and had its first meeting as such immediately thereafter in 1878. Dr. Herman Knapp of New York was elected chairman, and Dr. X. C. Scott of Ohio was elected secretary."

M. HAYWARD POST, M.D., St. Louis.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS. *Part III.* Boston, Chicago and New York, January. *Parts I and II,* Feb. 13-15. Centers where there are approved medical schools and five or more candidates. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th Street, Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various locations, July 21. *Oral.* Philadelphia, April 23-27, Chicago, Oct. 8-11. Sec., Dr. Curtiss B. Hickcox, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various locations, Feb. 16. *Oral.* Washington, April 14-16. Sec., Dr. George M. Lewis, 66 East 66th Street, New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* Chicago, Feb. 8-10. Boston, April 13-15. San Francisco, June 21-23. The oral examinations in the subspecialties will be held at the same time and places. Asst. Sec., Dr. William A. Werrell, 1 West Main Street, Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, June 5. Sec., Dr. W. J. German, 789 Howard Ave., New Haven, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY, INC. *Oral Part II.* Atlantic City, May 21-26. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Various Centers, January 1951. Final date for filing applications is July 1, 1950. *Practical.* Boston, May 22-26; Chicago, Oct. 2-6; West Coast, Jan. 1951. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY. *Part II,* New York City, Feb. 9-10. Sec. Treas., Dr. Harold A. Sofield, Room 1856, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* San Francisco, May. Chicago, October. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Richmond, Va., Feb. 10-12; Philadelphia, March 31-April 2; Cincinnati, May 5-7; San Francisco, June 30-July 2. Exec. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION: *Oral and Written.* Boston, Aug. 26-27. Final date for filing applications is April 1. Sec., Dr. Robert L. Bennett, Georgia Warm Springs Foundation, Warm Springs, Ga.

AMERICAN BOARD OF PLASTIC SURGERY: *Oral.* May-June. Sec., Dr. Louis T. Byars, 4647 Pershing Avenue, St. Louis, Mo.

AMERICAN BOARD OF PREVENTIVE MEDICINE AND PUBLIC HEALTH: *Oral and Clinical.* Chicago, Feb. 7-8. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe Street, Baltimore 5, Md.

AMERICAN BOARD OF PROCTOLOGY: *Parts I and II (Anorectal Surgery).* Chicago, Feb. 6-7. Secretary-General, Dr. Louis A. Buie, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: Spring Examination. Date and location of examination to be announced later. Final date for filing applications is Feb. 1. Sec., Dr. F. J. Braceland, 102-110 Second Ave., S.W., Rochester, Minnesota.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Chicago, week of June 18. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written,* Various centers, Oct. 25. Final date for filing applications is July 1. Sec., Dr. J. Stewart Rodman, 225 South 15th Street, Philadelphia.

AMERICAN BOARD OF UROLOGY: *Oral and Clinical.* Chicago, Feb. 11-15. Sec., Dr. Harry Culver, 7935 Sunnyside Road, Minneapolis 21.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 27-29. Sec., Dr. D. G. Gill, 519 Dexter Avenue, Montgomery.

ALASKA: * Juneau, March 7. Sec., Dr. W. M. Whitehead, Box 140, Juneau.

ARKANSAS: * *Examination.* Little Rock, June 8-9. Sec., Dr. Joe Verser, Harrisburg. *Eclectic.* Little Rock, June 8-9. Sec., Dr. Clarence H. Young, 1415 Main Street, Little Rock.

CALIFORNIA: *Examination, Written.* Los Angeles, Feb. 27-March 2; San Francisco, June 19-22; Los Angeles, Aug. 21-24; Sacramento, Oct. 16-19. *Examination, Oral and Clinical, for Foreign Medical School Graduates.* Los Angeles, Feb. 26; San Francisco, June 18; Los Angeles, Aug. 20; San Francisco, Nov. 12. *Reciprocity, Oral Examination.* Los Angeles, Jan. 21; Los Angeles, Feb. 25; San Francisco, June 17; Los Angeles, Aug. 19; San Francisco, Nov. 11. Sec., Dr. Frederick R. Sonntag, 1020 N Street, Sacramento 14.

COLORADO: * *Reciprocity.* Denver, April 4. Final date for filing application is March 18. Sec., Dr. George H. Gilles, 831 Republic Building, Denver.

CONNECTICUT: * *Examination.* Hartford, March 14-15. Secretary to the Board, Dr. Creighton Barker, 160 St. Ronan Street, New Haven. *Homeopathic.* Derby, March 9-10. Sec., Dr. Donald A. Davis, 30 Elizabeth Street, Derby.

DELAWARE: *Examination.* Dover, July 11-13. Sec., Dr. J. S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: * *Reciprocity.* Washington, March 13. Sec., Dr. Daniel L. Seckinger, 4130 E. Municipal Bldg., Washington.

FLORIDA: * Jacksonville, June 25-27. Sec., Dr. Frank D. Gray, 12 N. Rosalind Avenue, Orlando.

GEORGIA: *Examination.* Atlanta and Augusta, June. *Endorsement.* Atlanta, June. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

GUAM: *Endorsement.* Agana, last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam, % F.P.O., San Francisco.

IDAHO: Boise, July 10. Sec., Mr. Armand L. Bird, 305 Sun Bldg., Boise.

ILLINOIS: Chicago, April 4-6. Superintendent of Registration, Mr. Charles F. Kervin, Capitol Bldg., Springfield.

INDIANA: *Examination.* Indianapolis, June. Sec., Dr. Paul R. Tindall, 1138 K. of P. Bldg., Indianapolis.

IOWA: * *Examination.* Iowa City, June 12-14. Sec., Dr. M. A. Royal, 506 Fleming Building, Des Moines 19.

KANSAS: Kansas City, June 7-8. Sec., Dr. J. F. Hassig, 905 N. 7th Street, Kansas City.

MAINE: Portland, March 14-15. Sec., Dr. Adam P. Leighton, 192 State Street, Portland.

MARYLAND: *Examination.* Baltimore, June 20-23. Sec., Dr. Lewis P. Gundry, 1215 Cathedral Street, Baltimore 1.

MASSACHUSETTS: *Examination.* Boston, March 14-17. Sec., Dr. George L. Schadt, 413 E. State House, Boston.

MISSOURI: *Examination.* Jefferson City, Feb. 9-11. *Reciprocity,* Feb. 4. Exec. Sec., Mr. John A. Hailey, Box 14, State Capitol Building, Jefferson City.

MONTANA: Helena, April 3-5. Sec., Dr. Otto G. Klein, First National Bank Building, Helena.

NEVADA: Carson City, May 1. Sec., Dr. George H. Ross, 112 Curry Street, Carson City.

NEW HAMPSHIRE: Concord, March 8-9. Sec., Dr. John S. Wheeler, 107 State House, Concord.

NEW JERSEY: *Examination.* Trenton, June 20-23. Sec., Dr. E. S. Hallinger, 28 West State Street, Trenton.

NEW MEXICO: * Santa Fe, April 10-11. Sec., Dr. Charles J. McCoy, Coronado Building, Santa Fe.

NORTH DAKOTA: *Examination.* Grand Forks, July 5-7. *Reciprocity.* Grand Forks, July 8. Sec., Dr. C. J. Glaspel, Grafton.

OHIO: *Reciprocity.* Columbus, April 3. *Examination.* Columbus, June 14-17. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus 15.

OKLAHOMA: * *Examination.* Oklahoma City, June 7-8. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

PUERTO RICO: *Examination.* Santurce, March 7. Sec., Mr. Luis Cueto Coll, Box 3717, Santurce.

RHODE ISLAND: * *Examination,* Providence, April 6-7. Chief, Division of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: *Examination.* Columbia, June 26-29. *Reciprocity,* First Monday of each month. Sec., Dr. N. B. Heyward, 1329 Blanding Street, Columbia.

TEXAS: * *Examination.* Austin, June 19-21. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

UTAH. *Examination.* Salt Lake City, June. Dir., Dr. Frank E. Lees, 324 State Capitol Building, Salt Lake City.

VIRGINIA: *Examination.* Richmond, June 23-24. *Endorsement.* Richmond, June 22. Sec., Dr. K. D. Graves, 631 First St., S.W., Roanoke.

WEST VIRGINIA: Charleston, April 3-5. Sec., Dr. N. H. Dyer, State Capitol, Charleston.

WISCONSIN: * Milwaukee, July 11-13. Sec., Dr. C. A. Dawson, River Falls.

WYOMING: Cheyenne, Feb. 6. Sec., Dr. Franklin D. Yoder, State Capitol, Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: *Examination.* Tucson, March 21. Sec., Mr. Francis A. Roy, Science Hall, University of Arizona, Tucson.

ARKANSAS: *Examination.* Little Rock, May 9. Sec., Mr. L. E. Gebauer, 1002 Donaghey Building, Little Rock.

COLORADO: *Examination.* Denver, March 1-2. Sec., Dr. Esther B. Starks, 1439 Ogden St., Denver.

CONNECTICUT: *Examination.* New Haven, Feb. 11. Address: State Board of Healing Arts, 110 Whitney Avenue, New Haven 10.

DISTRICT OF COLUMBIA: Washington, April 17-18. Sec., Dr. Daniel L. Sechinger, 4130 E. Municipal Building, Washington.

FLORIDA: *Examination.* June 3. Sec., Mr. M. W. Emmel, University of Florida, Gainesville.

IOWA: *Examination.* Des Moines, April 11. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MINNESOTA: *Examination.* Minneapolis, April 4-5. Sec., Dr. Raymond N. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis.

NEW MEXICO: *Examination.* Santa Fe, Feb. 5. Sec., Mrs. Marguerite K. Cantrell, P. O. Box 1522, Santa Fe.

NEBRASKA: *Examination.* Omaha, May 2-3. Director, Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln.

OKLAHOMA: *Examination.* Oklahoma City, April 11. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

RHODE ISLAND: *Examination.* Providence, Feb. 8-9. Chief, Division of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Building, Providence.

SOUTH DAKOTA: Vermillion, June 3-3. Sec., Dr. Gregg M. Evans, 310 E. 15th Street, Yankton.

TENNESSEE: *Examination.* Memphis, March 17-18. Sec., Dr. O. W. Hyman, 874 Union Avenue, Memphis.

TEXAS: *Examination.* Austin, April 21-22. Sec., Brother Raphael Wilson, 306 Nalle Building, Austin.

Bureau of Medical Economic Research

MEDICAL ECONOMIC REVIEWS AND ABSTRACTS

Prepared by the Staff of the Bureau of Medical Economic Research

Controlling Factors in Economic Development. By Harold G. Moulton. Cloth. Price, $4. Pp. 307. The Brookings Institution, 722 Jackson Pl., N.W., Washington 6, D. C., 1949.

It is doubtful whether the controversy between the "pro-Keynesian" and the "anti-Keynesian," the deficit spending group and the balanced budget group, will be resolved in a short time. This controversy cannot be avoided by any treatise on contemporary economic situations because the scope of the argument is now carried out of the realm of pure theory by the political adaptations and consequences of deficit spending.

While this book makes poignant criticism of Keynesian theory and its present day offshoots, it is not comprehensive enough to stand as a complete rebuttal—if this is at all possible—of the present "popular" style of economic theory. The principal value of the book to the elementary reader, for whom it was designed, lies in its clear, if cursory, presentation of the difficulties inherent in politically controlled economies and their degenerate offspring, the welfare state.

Moulton divides his book into two section: (page 7)

"Part I looks backward and undertakes to appraise the forces and factors which accounted for the extraordinary, and unexpected, economic progress of the nineteenth and early twentieth centuries, and also the sources of maladjustment which restrained the rate of advancement. Part II looks forward. It indicates the economic potentialities of the century ahead and outlines the policies essential to their realization."

Popular and often academic thinking assumes that depressions are manifestations of man-made imperfections, rather than evidences of natural growth, and as such are subject to control. Recent economic theory, tempered by the depression of the thirties, has concerned itself largely with the business cycle and its control. To date most of the proposals for control may be grouped under the comprehensive label "government action." While it is impossible to enter here into the variations of Keynesian theory, contemporary versions assume that the economy does not contain the necessary impetus to continue at full employment and that economic stagnation will certainly occur unless external "transfusions" are applied, e. g., government spending and controlled fiscal policy. This view is summarized in the following quotation from A. H. Hansen, "Fiscal Policy and Business Cycles" (1941), page 306:

"It is just because we have developed, in our highly dynamic society, firmly fixed institutions and habits affecting the income elasticity of saving that we cannot rely upon autonomous increases in consumption to provide full employment once the extensive expansionist stimulus to investment has largely disappeared. . . . We shall be compelled to seek full employment of our resources by deliberately injecting a new stimulus to investment."

In Moulton's opinion the motivating forces in our economy are invention, innovation and scientific advancement in both the physical and social sciences. (He does not include war as an impetus or motivating force to the economy. He has, therefore, ignored the most disturbing innovation of modern times, for wars are now fought with machines.) Such forces do not lend themselves to stagnation but provide dynamic and continuing pushes to the economy. This theme is elaborated on in his "Looking Backward" section, in which he examines the economic growth of the nineteenth century. It is the author's further contention that consumption habits are not virtually fixed.

Economists of Moulton's group feel that a more even distribution of national income is an important stimulus to further capital expansion and income growth. This goal is in no way akin to "left wing" proposals of equality of income; the author does not fail to recognize the stimulus and incentive to production of increasing incomes. He merely asks for a happy medium—a state seldom achieved in the economic world.

Moulton proposes that efficiencies of production should be passed on as price reductions rather than given entirely as wage increases to the employees of the particular industries or firms which develop the increased efficiency (page 299). The author believes that through price reductions increases in efficiencies and savings in cost can be passed on to the largest number of persons. From a theoretical standpoint Moulton has a sound argument for passing technologic advances on to society if it could be assumed that, at any given instant of time, everyone could be satisfied that his pay was commensurate with his knowledge and ability. However the author realizes that wage rates must also be increased.

Moulton believes in government spending in a restricted sense. It is his well supported conclusion that depressions cannot be prevented, although they can be mitigated (page 338). Moulton is particularly succinct in his condemnation of the consequences of extensive government control; with this in mind the reader should pay special attention to pages 170 to 202.

The author has divided the growth of the hybrid economic system of this country into two phases—the Roosevelt period, from 1933 to 1940, and the Truman period, beginning in 1946. Moulton further contends that the reform measures of the Rooseveltian period did not strike directly at the basic principle of private enterprise. This cannot be said, however, of the Truman administration, which has evinced considerable interest in maintaining the economic controls necessitated by the war for permanent use.

It is too often forgotten that humanitarianism, molded by unrestricted emotionalism (and politics), fails to consider the economic factors and limitations involved in extending social insurance, health services and other social service plans. Finally, in the following passage Moulton seems to realize that all human needs are relative (page 292):

"Within limits . . . public expenditures to raise the plane of living of the underprivileged and to underwrite and provide free services to the public may be justified. The fundamental problem is to keep aggregate commitments within bounds—that is, within the limits of taxable capacity, and at a level that does not imperil financial stability. A factor already noted is that such programs commonly involve commitments which heavily mortgage future revenues on an expanding scale over a long future. This is notably the case with pensions, social insurance, and educational and health services. Starting from the proposition that all such programs are essential to national welfare, it is easy to argue that we cannot have too much education, health, or security. It is equally easy to forget that such services compete with other national activities for available funds and also for available resources and man power. The over-all limits to the supply of goods and services are set by national productive capacity, which is in turn determined by the factors affecting the expansion of wealth-producing power."

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Charitable Hospitals: Exemption from Taxation.—The defendant, Southern Illinois Hospital Corporation, filed objections to the county collector's application for judgment against, and order of sale of, the hospital's real estate located in the city of Herrin for nonpayment of taxes for the year 1947. In a separate action, the hospital also sought a refund of personal taxes for the same year, which had been paid under protest. Both suits were consolidated for trial. The judgment being against the hospital, an appeal was taken to the Supreme Court of Illinois.

The hospital claims to be a charitable institution within the purview of section 19(7) of the Revenue Act of 1939. In determining whether property is included within the scope of an exemption, the Supreme Court said, the statute must be strictly construed and all debatable questions resolved in favor of taxation. The primary use of the property involved must be considered and is the controlling factor. The principal and distinctive features of a charitable organization, continued the court, are that it has no capital and no provisions for making dividends or profits but derives its funds mainly from public and private charity and holds them in trust for the objects and purposes expressed in the instrument or charter creating the organization.

In two prior Illinois cases it was held that a charitable institution does not lose its charitable status, and consequent exemption from taxation, by reason of the fact that recipients of some of its benefits who are able to pay are required to do so, where no profit is made but the amounts received are applied in furthering its charitable purpose. A hospital not owned by the state or any other municipal corporation, but which is open to all persons, regardless of race, creed or financial ability, has, on several occasions, been held by this court to be a charitable organization within the meaning of the Revenue Act, and exempt from taxation, provided all funds received by the hospital are devoted to its charitable purpose and no part of the money received by it is permitted to inure to the benefit of any private individual engaged in managing the charity.

The Southern Illinois Hospital Corporation was organized under the laws of Illinois as a nonprofit corporation and received a charter April 15, 1946, which authorized it to acquire and build, operate and improve a hospital in the city of Herrin. After organization of the corporation and adoption of by-laws, the charter was amended Oct. 7, 1946 and a dissolution plan adopted which provides that the physical plant of the hospital will pass to the governing body of the city of Herrin in the event of dissolution. The corporation has no capital structure or stock, pays no dividends and pays no directors' fees, and all proceeds over and above expenses are put back into the corporation for the expansion of services, equipment and the physical plant. The hospital functions with an open staff, whose organization is controlled by staff members. There is no discrimination as to race, creed or color either as to patients or members of the staff. The per diem cost rate of the hospital, according to the formula of the Illinois Division of Hospital Services, is $9.84. In relief cases, the hospital was paid 50 per cent to 90 per cent of the per diem cost, dependent on the type of relief. In addition to the regular hospital facilities, it appears from the evidence that the hospital has a cancer clinic, trachoma control center, venereal clinic and x-ray, blood bank and library departments, some of which are operated with funds, equipment and material furnished by the state and federal governments and by the American Cancer Society. The United States Treasury Department has ruled that the corporation is exempt from payment of income taxes.

It is readily apparent, said the Supreme Court, that the financial structure, policy on remuneration of officers and directors, application of fees collected and the method and purpose of operation typify the hospital as a charitable organization within the confines of the principles announced by this court. The trial judge was of the opinion, however, that the hospital disqualified itself from tax exemption by its manner of admitting patients who are unable to pay for hospital services. The evidence as to admission of patients shows that in all emergency cases presented to the hospital the patients are treated without question as to ability to pay and that all elective cases referred to the hospital by a staff member are accepted without question. It is the practice that when an elective patient requests treatment he must pay a week's board in advance, if able to do so. If the patient states he is unable to pay, he is asked to wait until an investigation is made to determine whether he is eligible for relief and arrangements are made with the proper relief agency for payment. Ultimately, however, no patient is refused admission or treatment because of his inability to pay or inability to secure governmental aid. To maintain its charitable status, a charity must not place an obstacle of any character in the way of those who might need charity of the kind dispensed by this institution, calculated to prevent such persons making application or obtaining admission to the hospital, and the trial judge was of the opinion that the waiting period caused by investigating an elective patient's relief status is such an "obstacle." In view of the fact, said the Supreme Court, that all emergency or acute cases are immediately treated without question of their ability to pay and in view of the fact that all elective patients are ultimately treated despite their inability to pay or secure relief, we cannot agree. Sound business dictates that hospitals inquire into the ability of a prospective patient to pay, and it is the generally accepted practice of all hospitals. It is also within the realization of patients unable to pay that they will be assisted, if eligible, by various governmental agencies, and an investigation of that possibility by the hospital would, in our opinion, induce rather than deter a destitute patient from seeking admission. If an elective patient's need became acute or an emergency before the investigation was completed, the evidence shows he would be treated immediately without regard of his ability to pay, thus the hospital's custom of investigation would not have the effect of depriving the needy of treatment. Since investigations are made only in nonemergency and nonacute cases, and treatment ensues regardless of the result, we cannot hold, the court concluded, that the hospital has failed in its beneficent purpose or created obstacles that would hinder or prevent needy persons from seeking and receiving the charity it dispenses.

The city of Herrin pleaded, but did not argue, that the operation of the Herrin hospital is not such that it relieves the burden of the government and is therefore not a charity. In view of the evidence, said the Supreme Court, that the county relief patients are treated at a 50 per cent loss of the per diem cost and other relief patients at a 10 per cent to 50 per cent loss, we must hold that such a contention is without merit. Inasmuch as the hospital is the only one in the Herrin area, it is reasonable to speculate that the government is relieved of additional expenses it would incur in transporting and treating patients in hospitals removed from the area.

Accordingly the judgment of the trial court was reversed with directions to find in favor of the hospital in both cases.—*People ex rel Cannon v. Southern Illinois Hospital Corporation, 88 N. E. (2d) 20 (Ill., 1949).*

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in Continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology, Baltimore

19:801-898 (Sept.) 1949

Degenerative Changes in Right Half of Liver Resulting from Intra-Uterine Anoxia. P. Gruenwald.—p. 801.
Adhesiveness of Blood Platelets in Thromboembolism and Hemorrhagic Disorders: II. Diagnostic and Prognostic Significance of Platelet Adhesiveness. S. E. Meolten, L. Vroman, and G. M. S. Vroman.—p. 814.

American Journal of Medical Sciences, Philadelphia

218:241-360 (Sept.) 1949

Metastases in Bone Marrow and Myelophthisic Anemia from Carcinoma of Prostate. R. W. Rundles and U. Jonsson.—p. 241.
Pituitary Gland of Rats with Experimental Goiter. G. C. Henegar and G. M. Higgins.—p. 251.
*Treatment of Pneumococcic Meningitis with Penicillin: Study of 125 Consecutive Cases, with 73 Per Cent Recovery. E. Appelbaum, J. Nelson and M. B. Allen.—p. 260.
Chemical Combination of Insulin with Muscle (Diaphragm) of Normal Rat. W. C. Stadie, N. Haugaard, J. B. Marsh and A. G. Hills.—p. 265.
Hormonal Influences on Chemical Combination of Insulin with Rat Muscle (Diaphragm). W. C. Stadie, N. Haugaard, A. G. Hills and J. B. Marsh.—p. 275.
Effect of Body Position and Reference Level on Determination of Venous and Right Auricular Pressure. J. O. Davis and N. W. Shock.—p. 281.
Renal Studies in Acute Infectious (Epidemic) Hepatitis. J. D. Farquhar.—p. 293.
Clinical Report on Toxicity of New Mercurial Diuretic (Thiomerin) for Subcutaneous Administration. A. B. Feinberg, J. H. Isaacs and W. S. Boikan.—p. 298.
Toxicity of Intravenous Ammonium Compounds. N. W. Karr and E. L. Hendricks.—p. 302.
Alterations in Serum Potassium and Their Relation to Certain Constituents of Blood in Diabetic Acidosis. C. S. Nadler, S. Bollet, J. G. Reinhold and M. Lanning.—p. 308.
Increased Hypoprothrombinemic Effect of Small Dose of Dicumarol in Congestive Heart Failure. D. Stats and S. Davison.—p. 318.
The Collagen Diseases. E. Aegerter and J. H. Long.—p. 324.
Ten Years in Epidemiology of Mumps. J. E. Gordon and L. Kilham.—p. 338.

Penicillin in Pneumococcic Meningitis.—Appelbaum and co-workers treated 125 patients with pneumococcic meningitis in ages ranging from under 1 year to 90, with intrathecally administered penicillin in all but 2 instances. In addition, the patients were given penicillin by the intramuscular route and most of them received also a sulfonamide compound, usually sulfadiazine. The schedule of penicillin therapy finally evolved was as follows: up to 4 years of age three to five intrathecal injections of 25,000 to 50,000 units per injection and 400,000 units per day by the intramuscular route for seven to ten days. Older children and adults were given three to five intrathecal injections of 50,000 to 100,000 units per injection and 800,000 units daily by the intramuscular route for seven to ten days. Ninety-two patients recovered and 33 died, giving a recovery rate of 73 per cent. There were only 14 deaths among 197 patients under 51 years of age and 19 deaths among 28 patients above that age. The prognosis was decidedly worse in the older age groups. An attempt to treat 8 patients with intramuscular but without intraspinal penicillin in conjunction with sulfadiazine proved successful in only 2 instances. There were only a few instances in which a complication or untoward reaction was attributable to the intrathecal administration of penicillin. The rare occurrence of such a reaction or complication should not be a deterrent to the administration of penicillin intraspinally. Neurologic sequelae were encountered in a small number of cases. The 4 instances of serious brain damage were all in infants under 1 year of age. It was difficult to evaluate properly the role of the adjunctive use of sulfadiazine.

American J. of Obstetrics and Gynecology, St. Louis

58:419-624 (Sept.) 1949. Partial Index

Actinomycosis of Ovaries and Fallopian Tubes. R. J. Paalman, M. B. Dockerty and R. D. Mussey.—p. 419.
Transverse or Oblique Presentation of Fetus in Last Ten Weeks of Pregnancy: Its Causes, General Nature and Treatment. C. S. Stevenson.—p. 432.
*Vaginal Smear in Population Screening for Uterine Carcinoma. O. F. Kraushaar, J. T. Bradbury and W. E. Brown.—p. 447.
Statistical Study of Cancer of Corpus Uteri. J. P. Palmer, M. C. Reinhard, M. G. Sadugor and H. L. Goltz.—p. 457.
Pregnancy with Sickle Cell Anemia: Review of Literature and Report of Cases. H. H. Fouché and P. K. Switzer.—p. 468.
Attitude of Fetus in Breech Presentation. H. L. Wilson.—p. 478.
Tubal Sterilization Through Vagina. H. Boysen and L. A. McRae.—p. 488.
Observations on Use of Progesterone in Threatened Abortion with Special Reference to Pregnandiol Excretion as Guide to Therapy. H. S. Guterman and A. S. Tulsky.—p. 495.
*Pregnancy and Tuberculosis. G. Schaefer.—p. 503.
Experience with Extraperitoneal Cesarean Section at University of Iowa Hospitals. W. C. Keettel and J. H. Randall.—p. 510.
Primary Carcinoma of Fallopian Tube. B. D. Stern and B. J. Hanley.—p. 517.
Application of Vaginal Smear to Diagnosis of Pregnancy: Preliminary Report. R. G. Bunime.—p. 524.
*Specific Malignant Cells Exfoliated from Preinvasive Cancer of Cervix Uteri. H. E. Nieburgs and E. K. Pund.—p. 532.
Papillary Clear Cell Adenocarcinoma of Ovary. E. G. Anderson, R. S. Lupez and A. E. Rappoport.—p. 537.
"Crush" Syndrome in Obstetrics and Gynecology. H. F. Paxton and L. J. Golub.—p. 544.
Pulmonary Mucormycosis Complicating Pregnancy. J. B. Lloyd, L. I. Sexton and A. T. Hertig.—p. 548.
Specific Treatment of Vaginal Mycosis. H. C. Hesseltine and E. S. Beckette.—p. 553.
Evaluation of Hormonal and Radiation Therapy in 190 Cases of Functional Sterility and Secondary Amenorrhea: Preliminary Report. R. S. Fishler.—p. 559.

Vaginal Smear in Screening for Uterine Carcinoma.—Kraushaar and co-workers obtained vaginal smears from 5,314 women, utilizing a damp cotton swab applicator protected by a sheath. The women represented three segments of the female population: general hospital admissions, institutional inmates and the female population of an Iowa county. The established clinical and histologic methods of diagnosing genital cancer were used. In the 115 genital cancers in the hospital series, 102 were diagnosed positively on the initial cytologic examination, 108 on the initial histologic examination and 98 on the first pelvic examination. Each of the three methods alone shows a significant error rate. The cytologic method can be used to select those women who need further evaluation by clinical and histologic studies. By coordinating cytologic, clinical and histologic methods of detection, few genital cancers will escape detection.

Pregnancy and Tuberculosis.—Schaefer reports on 116 tuberculous pregnant women who were delivered at Sea View Hospital. The incidence of tuberculosis complicating pregnancy, when fluoroscopy and roentgenography are used in the antepartum examination, is approximately 2 per cent. Twenty-three of the 116 women died, giving a maternal mortality of 19.8 per cent; 87 per cent of the deaths occurred in the group with far-advanced tuberculosis. The mortality in the far-advanced group delivered by cesarean section was 33.3 per cent, whereas the mortality rate in the far-advanced group delivering spontaneously was 63.1 per cent. Parity had no effect on pulmonary tuberculosis. The mortality, when tuberculosis is diagnosed during pregnancy, is almost twice as great as when it is diagnosed before pregnancy. The important factor in prognosis for the pregnant woman is the extent and type of the tuberculous lesion and the rapidity with which treatment can be instituted. Prolonged, severe labor is to be avoided in pulmonary tuberculosis. Pentobarbital sodium for analgesia and local anesthesia has given good results in the author's cases. Cesarean section has a definite indication in selected cases. None of the infants born had evidence of prenatal or postnatal tuberculosis. The infant mortality was 1.7 per cent.

Malignant Cells in Preinvasive Cervical Cancer.—Nieburgs and Pund, in a routine investigation of 3,700 women of all social strata, discovered with the endocervical smear technic 22 cases of preinvasive cancer of the cervix and 4 borderline cases. The diagnosis was made from biopsies or endocervical curettage. A specific type of exfoliant malignant cells from

preinvasive cancer was found in 19 of the 22 cases. The preinvasive cancer cells are usually larger than the invasive cancer cells and have a greater amount of cytoplasm, which usually stains a typical orange-yellow. The nuclei may be either small, hyperchromatic, without details, and with the nuclear membrane irregular, or they may be large, foamy and agranular with well defined borders or with distinct borders and a particular type of granularity which is never found in invasive cancer. These cells generally appear singly or in loose groups but never in adherent clusters. There is usually a striking predominance of normal cells, and the cells in the smears from the vaginal pool may be completely cornified although the patient may be in the luteal phase of the menstrual cycle or of postmenopausal age. Recognition of the specific characteristics of the exfoliated cells of preinvasive cancer may in the future contribute to the detection of a great number of curable cases of cancer. Routine screening of all women by the endocervical smear technic should constitute an important part of preventive oncology.

American Journal of Ophthalmology, Chicago

33:1177-1316 (Sept.) 1949

Therapeutic Results in Advanced Chronic Simple Glaucoma with Telescopic Fields. S. Bloomfield and L. Kellerman.—p. 1177.
*Cataract and Tetany Produced by Parathyroid Deficiency During Pregnancy, Lactation and Menstruation. D. J. Lyle.—p. 1183.
Biology of Trachoma. Y. Mitsui.—p. 1189.
Dupuy-Dutemps Dacryocystorhinostomy. A. V. Hallum.—p. 1197.
Ocular Onchocerciasis. M. Puig Solanes, B. Riverall Noble and A. Fonte.—p. 1207.
Ocular Lymphomas. P. Heath.—p. 1213.
Fusional Vergence. E. F. Tait.—p. 1223.
Surgical Repair of Neurofibromatosis of Eyelid. M. M. Kulvin.—p. 1231.
Survey of Anterior Segment Photography. E. S. Wright.—p. 1245.
*Talc Granulomas of the Eye. G. L. McCormick, W. L. Macauley and G. E. Miller.—p. 1252.
Intraocular Foreign Bodies: 50 Consecutive Cases. J. P. McBride.—p. 1255.
Handling of Amblyopic Patient. M. C. Wheeler.—p. 1261.

Cataract and Tetany in Parathyroid Deficiency.—Lyle reports 1 woman aged 28 with idiopathic parathyroid insufficiency. Discrete opacities of various densities were observed beneath the posterior capsule of both lenses, with a few raylike riders arching through the periphery to the anterior subcapsular area. The loss of sight began gradually during the first pregnancy and increased with lactation and a subsequent pregnancy. The vision became more disturbed with menstruation. The patient presented twitchings of eye muscles and a tingling sensation in her fingers and feet at night. The diagnosis of idiopathic parathyroid deficiency was established by positive Chvostek and Trousseau signs and a low serum calcium determination of 7 mg. per hundred cubic centimeters of blood. The increased demand for calcium during pregnancy, lactation and menstruation may change an asymptomatic latent parathyroid deficiency into a symptomatic manifest hypoparathyroidism, with serious consequences to vision through ectodermal damage, both neural and somatic. These complications can be averted by routine examination during early pregnancy and lactation. Medication for prevention should begin at the fifth month of pregnancy, be terminated at labor and resumed at the end of the first month of lactation. One teaspoon (3.7 cc.) of calcium gluconate or calcium lactate in water should be given three times a day. An average daily intake of 1.5 Gm. of calcium in pregnancy and more in lactation is required. In addition to the increased calcium, the phosphorus and phosphate intake should be restricted. Dihydrotachysterol and vitamin D should be given. Treatment, once the symptoms have appeared, may arrest but cannot entirely restore the visual loss.

Talc Granulomas of the Eye.—McCormick and co-workers report the occurrence of a foreign body granuloma of the eye due to talcum powder in a woman aged 32. Smooth, semitranslucent, grayish tumor masses developed temporally, and usually at the sites of eye muscle surgery for right convergent strabismus, fourteen years after the original operation. Biopsy revealed dense fibrous connective tissue in which were embedded nodules of epithelioid cells. Many of the nodules contained particles of unstainable crystalline material, which in size and shape resembled talc. The tumor masses were surgically excised. The pathologic observations were similar to those made on biopsy except that there was some lymphocytic infiltrate associated with the epithelioid nodes. The pathologic changes resembled those observed in sarcoidosis but apparently represented a tissue reaction to a foreign crystalline material, which was probably talcum powder. The operative field in eye muscle surgery is widely exposed and vulnerable to talc contamination in contrast to intraocular operations. This is apparently the first recorded instance of such a lesion occurring in the eye.

American Journal of Public Health, New York

39:1091-1266 (Sept.) 1949. Partial Index

Facts and Figures About Child Health in the United States: Critical Appraisal of Academy of Pediatrics Study of Child Health Services and Pediatric Education. K. Bain and H. C. Stuart.—p. 1091.
Nursing Home—Medical Care Facility. J. H. Kinnaman.—p. 1099.
*Inactivation of Partially Purified Poliomyelitis Virus in Water by Chlorination: III. Experiments with Natural Waters. S. G. Lensen, M. Rhian, M. R. Stebbins and others.—p. 1120.
Medical Care Activities of Full-Time Health Department. M. Terris and N. A. Kramer.—p. 1129.
Histoplasmosis: Study of Reactors to Histoplasmin. J. W. Armstrong.—p. 1136.
New York State Home Accident Prevention Program. I. J. Brightman.—p. 1149.
Seattle's Public Health and Education Departments Cooperate in Organizing and Conducting Food Handler's Training Program. E. E. Palmquist, K. Williams and P. F. Aldridge.—p. 1163.
Effects of Health Council Programs on Basic Health Education. J. W. Ferree and S. S. Lifson.—p. 1167.
Health Problems in Industrialized Agriculture. S. J. Axelrod.—p. 1172.

Inactivation of Poliomyelitis Virus in Water by Chlorination.—Lensen and his associates previously reported an investigation on the inactivation by chlorination of partially purified poliomyelitis virus (mouse-adapted Lansing strain) in distilled water. They now report further experiments in which representative samples of different natural waters were used instead of distilled water. The inactivation of partially purified poliomyelitis virus in natural waters was studied by chlorination of 100 cc. portions of water to which virus was added in final concentrations of 0.25 and 0.5 per cent. Samples of three different lake waters, two river waters and one lime-treated well water were used in the experiments. In samples of natural waters having a p_H range of 7.9 to 8.3 the virus was consistently inactivated within ten minutes in presence of 0.05 parts per million residual free chlorine at the end of this contact period. In many instances, but not always, the virus was inactivated by still smaller amounts of free residual chlorine. In experiments at a higher p_H range (10.0 to 11.25), 0.1 to 0.15 parts per million residual free chlorine were necessary to achieve the same results.

Blood, New York

4:989-1084 (Sept.) 1949

Mediterranean Hemopathic Syndromes. V. Chini and C. Malagnini Valeri.—p. 989.
*Use of Exchange Transfusion for Treatment of Severe Erythroblastosis Due to A-B Sensitization, with Observations on Pathogenesis of Disease. A. S. Wiener, I. B. Wexler and J. G. Hurst.—p. 1014.
Effect of Stasis of Blood in Varicose Veins on Erythrocyte Fragility, with Accompanying Studies Comparing Red Cells and Other Blood Elements with Cubital Vein Blood. S. R. Mettier, J. C. Weaver and A. F. McBride.—p. 1033.
*Role of Staphylocoagulase in Blood Coagulation: I. Reaction of Staphylocoagulase with Coagulase-Globulin (CG) to Form Coagulase-Thrombin (CT). J. B. Miale.—p. 1039.
Multiple Myeloma as Form of Leukemia. M. A. Rubinstein.—p. 1049.
Use of Antimony in Multiple Myeloma. M. A. Rubinstein.—p. 1068.

Severe Erythroblastosis Due to A-B Sensitization.—Wiener and co-workers report 2 cases of severe erythroblastosis in newborn infants, both of whom were second children of their parents. Grouping and Rh-Hr tests done on the parents and on the firstborn children, and results of antenatal antibody titrations on maternal serum, demonstrated that the erythroblastosis resulted from sensitization to the A and B agglutinogens respectively. Injections of A and B group substances failed to arrest the disease. Exchange transfusions were carried out using 900 to 1,000 cc. of fresh group O blood. The response was prompt and dramatic in each case, although the convalescence was prolonged in 1 instance by intercurrent diarrhea. Both infants made complete recoveries and have developed normally, both physically and mentally. The authors conclude that the greatest majority of cases of jaundice and anemia of the

newborn that cannot be explained on the basis of Rh incompatibility are caused by incompatibility of the major blood groups. High maternal alpha and beta antibody titers are not necessarily correlated with disease in the infant. Univalent alpha and beta antibodies present in the maternal serum traverse the placenta and are the cause of the disease in the infant. Bivalent antibodies are held back by the intact placenta and play hardly any role in the causation of the disease. A high percentage of normal persons possess univalent alpha and beta antibodies, but they are usually of only moderate or low titers and relatively harmless to the infant because of the presence of a special protective mechanism consisting primarily in the incomplete state of development of the A and B agglutinogens in the red cells of the newborn infant or fetus. The saliva specimens were examined in a series of fourteen families with typical serologic and clinical observations of erythroblastosis due to A or B sensitizations. All the affected babies in these families were secretors. It is suggested that the baby being a secretor increases the likelihood of his sensitizing the mother. Presumably the group substances in solution in secretions could traverse the placental barrier more readily than intact red cells. A theory is suggested that the quality of the alpha and beta antibodies, namely, whether they are homospecific or heterospecific, may affect the severity of the manifestations in the infant.

Staphylocoagulase in Blood Coagulation.—Miale demonstrated that sterile cell-free filtrates of broth cultures of some strains of staphylococci contain a substance, called staphylocoagulase, which does not clot purified fibrinogen but does clot oxalated plasma. Staphylocoagulase is in itself incapable of clotting purified fibrinogen. When an accessory plasma factor, called coagulase globulin (CG), is added to staphylocoagulase a second agent, a thrombin-like substance called coagulase-thrombin (CT), is progessively formed which is able to clot purified fibrinogen. When the clotting times of plasma with increasing amounts of either staphylocoagulase or coagulase-thrombin are plotted against concentrations of the clotting agents, hyperbolic curves are obtained which are similar to those obtained with classic prothrombin or thrombin. Coagulase globulin appears to be distinct from the AcG of Seegers or the "V" factor of Owren. It appears to be more closely related to the "antihemophilic globulin" of Taylor and co-workers but is not identical with it, since coagulase globulin is obtainable from hemophilic blood as contrasted to antihemophilic globulin, which is not. The presence of coagulase globulin in thrombocytes could not be demonstrated.

California Medicine, San Francisco

71:173-252 (Sept.) 1949

Chemosurgery in Cutaneous Malignancy. F. E. Mohs.—p. 173.
Public Health Aspects of Lymphogranuloma Venereum. R. A. Koch, R. S. McDonald and M. S. Marshall.—p. 178.
Safer Gastrectomy: 100 Consecutive Cases Without Mortality. L. A. Alesen, W. F. Quinn and N. L. Cardey.—p. 187.
Management of Cord and Placental Blood and Its Effect Upon the Newborn. A. M. McCausland, F. Holmes and W. R. Schumann.—p. 190.
Bacterial Meningitis and Other Diseases Affecting the Meninges: Review of 349 Cases. W. L. Cover.—p. 197.
Pathology of Nodular Goiter. S. Lindsay.—p. 207.
Therapeutic Problems of Non-Toxic Nodular Goiter. M. E. Dailey. —p. 209.
Hyperparathyroidism. J. C. Rooney.—p. 211.

Public Health Aspects of Lymphogranuloma Venereum.—Koch and associates state that in San Francisco between April 1943 and December 1947 Frei tests and complement fixation tests for lymphogranuloma venereum were performed on all patients examined at the Women's Jail Clinic and on all patients who had general symptoms referable to venereal diseases at the San Francisco City Clinic. This procedure has led to the discovery of a notably greater number of infections in San Francisco than has been reported in other metropolitan seaports of the western United States. The authors describe the technic and discuss the reliability of the Frei test, for which they use an antigen (lygranum®) prepared from yolk sacs harvested from chicken embryos moribund or recently dead from infection with the virus of lymphogranuloma venereum and purified by selective centrifugation. The technic of the complement fixation test for lymphogranuloma venereum is similar to that of the Kolmer complement fixation test. Because it is less specific, the complement fixation test should not be used as an exclusion test. The possibility of a carrier state exists, especially in the female. It has been observed that female sex contacts of persons known to be infected are often clinically asymptomatic but show a positive response to the diagnostic tests. Diagnosis of the disease is essential, for the diminished use of sulfonamide drugs in the control of venereal disease increases the possibility of a carrier state of those in whom the disease is undiagnosed. Penicillin, which has largely replaced the sulfonamide compounds in the treatment of gonorrhea, has no therapeutic effect on lymphogranuloma venereum. Thus the disease may be untreated if undiagnosed. It is recommended that all male and female patients who have symptoms indicative of disease of the inguinal lymph nodes, or who are examined for genital clinical symptoms referable to a venereal disease should have a Frei test for lymphogranuloma venereum.

Georgia Medical Association Journal, Atlanta

38:365-422 (Sept.) 1949

Diseases of Cervix. C. G. Collins, J. H. Collins, G. T. Schneider and J. R. Mighell.—p. 365.
Normal Electrocardiogram and Anginal Syndrome. E. P. Roberts.—p. 372.
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Petechiometer: Simple Method for Measuring Capillary Fragility. J. I. Weinberg.—p. 382.
Use of Rice Diet in Hypertension: Preliminary Report of 25 Patients. W. H. Clark, R. E. Felder and J. W. Chambers.—p. 384.
Time Factor in Testing for Visual Acuity Following Eye Injuries. J. Crawford and M. Linebach.—p. 391.
Why I am Glad I Affiliated in Public Health Nursing. C. Knight. —p. 394.

Iowa State Medical Society Journal, Des Moines

39:417-460 (Sept.) 1949

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Cutaneous Reactions to Some of the Antibiotic Drugs in Medicine. R. L. Barton.—p. 419.
Lower Nephron Nephrosis. G. D. Jenkins.—p. 422.
Intracapsular Cataract Extraction by Suction. J. H. McNamee.—p. 424.
Late Cutaneous Relapse Following Rapid Treatment of Early Syphilis with Penicillin: Report of Case. R. G. Carney and T. R. McGowan. —p. 427.

Journal of Experimental Medicine, New York

90:181-272 (Sept.) 1949

Murine Virus (JHM) Causing Disseminated Encephalomyelitis with Extensive Destruction of Myelin. F. S. Cheever, J. B. Daniels, A. M. Pappenheimer and O. T. Bailey.—p. 181.
Experimental Disseminated Encephalomyelitis in White Mice. P. K. Olitsky and R. H. Yager.—p. 213.
Sequences in Formation of Clots from Purified Bovine Fibrinogen and Thrombin: Study with Electron Microscope. K. R. Porter and C. Van Zandt Hawn.—p. 225.
Relative Significance of Graded Immunizing and Challenge Doses in Measuring Potency of Vaccines: Study of Mouse Protection by Typhoid Vaccine. H. C. Batson.—p. 233.
Studies on Bacteriophage: I. Relationship Between Somatic Antigens of Shigella Sonnei and Their Susceptibility to Bacterial Viruses. E. M. Miller and W. F. Goebel.—p. 255.
Nephrotoxic Nephritis in Rats: Evidence for Glomerular Origin of Kidney Antigen. D. H. Solomon, J. W. Gardella, H. Fanger and others.—p. 267.

Journal of Immunology, Baltimore

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Fundamental Notions in Estimation of Complement Fixation: I. General Relations and Proposed Uniform Notation. W. R. Thompson, C. E. Rice, E. Maltaner and F. Maltaner.—p. 353.
Delayed Chronic Inflammatory Reaction at Antigen Depot in Guinea Pig, Effected by Systemic Sensitization. L. M. Kopeloff and N. Kopeloff. —p. 363.
Relationship of Mengo Encephalomyelitis, Encephalomyocarditis, Columbia-SK and M. M. Viruses. G. W. A. Dick.—p. 375.
Antibiotic Substance Produced by Member of Shigella Group. L. B. Fastier.—p. 399.
Cold Hemagglutination Reactions with Influenza Virus. J. R. Overman and W. F. Friedewald.—p. 415.
Effect of Aureomycin upon Infections with Bacterium Tularense in Experimental Animals. C. L. Larson.—p. 425.
Use of Ultraviolet Absorption Spectroscopy in Quantitative Precipitin Reaction. D. Gitlin.—p. 437.
Studies on Scrub Typhus (Tsutsugamushi Disease): IV. Heterogeneity of Strains of R. Tsutsugamushi as Demonstrated by Cross-Neutralization Tests. B. L. Bennett, J. E. Smadel and R. L. Gauld.—p. 453.

Journal of International College of Surgeons, Chicago

12:599-772 (Sept.-Oct.) 1949. Partial Index

*Gastric and Duodenal Ulcers and Their Complications: Treatment by Extensive Resection. H. Finsterer.—p. 599.
Variations in Blood Supply of Supramesocolonic Organs. N. A. Michels.—p. 625.
Riddle of Peripheral Arterial Embolism. M. Iselin and R. H. de Balsac. —p. 628.
Contribution to Sympathetic Pelvic Plexus Development. A. Francese. —p. 648.
*Vagotomy in Treatment of Peptic Ulcer. S. Teneff.—p. 656.
Radium Treatment of Prostatic Hypertrophy. R. Dargent.—p. 666.
Antagonistic Reflexes of Middle Meningeal and Ophthalmic Arteries: Influence on Cerebral Circulation and Cerebrospinal Fluid. A. Serra. —p. 670.
Rare Tumors: Etiology and Localization: Report of 3 Cases. F. Arel. —p. 673.
Contribution to Bone Surgery. B. Toker.—p. 675.
Transplantation of Renal Calyces in Man: Technic and Results. G. Böhm.—p. 680.
Surrounding and Suspending Ligature of Kidney. L. Carmona.—p. 685.
Results of Transplantation of Ureter into Intestine. E. Minguzzini. —p. 691.
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Prostatic Hypertrophy. M. Verardi.—p. 697.
Mesenteric Lymphadenopathies. F. F. Asencio.—p. 702.
Megacolic Artificial Anus in Pathologic Segment-Hirschsprung's Disease. F. S. Evrensel.—p. 705.
Streptomycin in Surgical Therapy of Pulmonary Tuberculosis. J. H. Forsee.—p. 707.
Late Complications of Traumatic Dislocations of Hip Joint. N. Rathóczy. —p. 728.

Extensive Resection of Gastric and Duodenal Ulcers.—Finsterer performed the extensive two-third stomach resection on 8,230 patients with gastric or duodenal ulceration. There were 180 fatalities in 4,522 resections of uncomplicated gastric or duodenal ulcer carried out in the author's ward in the Vienna General Hospital, a mortality rate of 3.9 per cent. The mortality rate was 2.6 per cent with 58 deaths in 2,191 resections performed by him in private hospitals. Five of 119 patients (4.2 per cent) died in whom resection for exclusion without pylorectomy was performed, while 7 of 51 (13.7 per cent) died in whom resection for exclusion with pylorectomy was done. Forty-eight of 614 patients (7.8 per cent) operated on for ulcer near the cardia died. Forty-four of these deaths occurred in 426 patients in whom the ulcer had penetrated into the pancreas (a mortality rate of 10.3 per cent). Four of the 79 patients operated on according to Madlener's method died, but 109 patients whose ulcers had not penetrated into the pancreas were cured after an arch-shaped resection and a Billroth I anastomosis. Six of 165 patients (3.6 per cent) in whom resection as an early operation was performed for acute profuse hemorrhage died; late operation was followed by 31 deaths in 136 resections (22.8 per cent), mainly because of parenchymatous degeneration of the organs caused by anemia. Thirty-five of 293 patients (11.9 per cent) in whom radical operation was performed for uncomplicated gastrojejunal ulcer died. Twenty of 49 patients whose cases were complicated by hemorrhage or a colon fistula died. Permanent results were good after extensive resection. A follow-up of 244 patients with gastric ulcer operated on during the period 1916 to 1930 revealed that 234 (95.8 per cent) were completely free from pain and only 10 (4.2 per cent) had mild pain. Of 508 patients on whom resection was performed for duodenal ulcer, 481 were cured after six to twenty-one years, 10 were improved and 17 were failures. The ulcer which seems to be surgically incurable and which recurs despite several operations may be avoided by a renewed operation which eliminates the reasons for the recurrences, which are a Y-shaped anastomosis, an enteroanastomosis added to the normal end to side anastomosis, and a stomach resection which is not sufficiently extensive to induce permanent anacidity.

Vagotomy for Peptic Ulcer.—Teneff performed bilateral vagotomy on 70 patients, 16 with peptic ulcers, 44 with duodenal ulcers, 5 with ulcers of the new stoma and 5 with ulcers that did not heal after gastroenteroanastomosis. The immediate results in each case were satisfactory. There were no operative deaths. The postoperative period was uneventful. Two patients treated by bilateral vagotomy without gastroenterostomy had gastric retention and dilatation of the stomach. The condition was relieved by gastroenterostomy. Pain disappeared promptly in the remaining patients. They were free from pain throughout the follow-up period of three to twelve months. There was improvement in general condition and weight. There was a decided decrease in free hydrochloric acid and total acid after the operation. Dragstedt's operation is the most efficient physiologic surgical treatment of peptic ulcer, because it is founded on the basis of physiopathologic conditions. The author prefers the abdominal diaphragmatic route, which, in addition to its minor operative risk, permits exploration of the stomach and execution of another procedure, usually gastroenterostomy but sometimes partial resection, as for a postanastomotic ulcer.

Journal of Nervous and Mental Disease, New York

110:93-184 (Aug.) 1949

Frontal Lobotomy and Impairment of Abstract Attitude. K. Goldstein. —p. 93.
Evaluation of Lobotomy and Its Potentialities for Future Research in Psychiatry and Basic Sciences. L. C. Kolb.—p. 112.
Non-Convulsive Biochemotherapy with Histamine: Preliminary Report on Treatment of Hospitalized Schizophrenic, Manic Depressive and Involutional Psychotics. A. M. Sackler, M. D. Sackler and R. R. Sackler.—p. 149.

Journal of Neurosurgery, Springfield, Ill.

6:351-438 (Sept.) 1949

Sensory Pathways from Shoulder Joint. M. Wrete.—p. 351.
*Restoration of Cerebral Function After Prolonged Cardiac Arrest. J. C. Fox Jr.—p. 361.
Syringo-Encephalomyelia: Discussion of Related Syndromes and Pathologic Processes, with Report of Case. H. D. Kirgis and D. H. Echols. —p. 368.
*Failure to Disclose Ruptured Intervertebral Disks in 32 Operations for Sciatica. D. H. Echols and F. C. Rehfeldt.—p. 376.
Specific Epileptic Syndrome Favorably Affected by Lysis of Anomalous Pacchionian Granulations. J. E. Scarff.—p. 383.
Craniostenosis with Notes on Modified Operation for Brachycephalic Form. D. Fairman and G. Horrax.—p. 388.
Surgical Experiences with Acoustic Tumors. A. Givré and H. Olivecrona. —p. 396.
Remembrance of Things Past. D. C. Elkin.—p. 408.

Cerebral Function After Cardiac Arrest.—Fox reports reversible changes due to cerebral hypoxia during artificial maintenance of the circulation and respiration over a period of twenty-seven minutes of ventricular fibrillation in a boy aged 7. The boy had a deep laceration of the right sole and was operated on under open drop ether anethesia induced with cyclopropane. The pulse suddenly stopped at the close of the operation. Heart sounds could not be heard, and respirations ceased. Cardiac massage was immediately started and continued by intermittent compression of the heart against the sternum at a rate of 60 times per minute. The anesthetist maintained artificial respiration with the anesthetic machine and supplied pure oxygen to the lungs. Spontaneous respirations began fifteen minutes after the onset of cardiac arrest, while the heart was still being massaged but had shown no sign of contraction. Two intravenous injections of 1 per cent procaine hydrochloride were given, the first of 3 cc. eighteen minutes after cardiac arrest, the second of 2 cc. 26.5 minutes after cardiac arrest. Thirty seconds after this the heart stiffened beneath the massaging fingers and began to contract spontaneously. After two minutes of irregular contraction there developed a rapid, strong, regular pulse. The child was aroused from coma ten hours after resuscitation. Two hours later his first words were spoken, but he remained semi-conscious with alternating fixed stare and roving movements of the eyes. He was restless, mentally confused and irritable. Neurologic survey showed full visual fields to confrontation tests, faulty ocular fixation with apparent loss of visual acuity, clumsiness of the hands associated with bilateral astereognosis. Progressive recovery took place during the twenty-six days of postoperative stay in the hospital. The prolonged loss of visual acuity and the severe astereognosis indicate that the visual and sensory cortex were particularly vulnerable to the injurious anoxic effects. Complete recovery is evidence of reversibility of the cerebral changes resulting from prolonged hypoxia. Both clinical and experimental data support the concept of a gradient of susceptibility as the neuraxis is descended from cerebral cortex to spinal cord. If the cardiac arrest due to ventricular fibrillation is promptly and effectively handled, and the heart

survives, it is unlikely that the brain of that person will suffer irreparable damage from the degree of hypoxia occurring during the period of resuscitation.

Negative Explorations for Ruptured Disks.—Echols and Rehfeldt operated on 32 patients with sciatica, 25 men and 7 women between the ages of 27 and 65. In 18 of the 32 patients an adequate explanation for the sciatica was demonstrated at operation. There were 8 cases of bulging disk, 4 cases in which the root was adherent to the disk, 4 cases of root compression by hypertrophy of bone, and 1 case each of spondylolisthesis and congenital malformation of the dural sac. It is possible that the apparent pathologic condition in a few of these 18 cases of miscellaneous lesions was not the actual cause of the sciatic pain, but the finding of pathologic lesions other than disk nodules and free fragments of cartilage does not necessarily give a poor prognosis, for 14 of the 18 patients are working full time, even though they may not be free of pain in the back and leg. No pathologic condition could be demonstrated at operation in the remaining 14 patients. A possible explanation for the sciatica could be postulated in only 7 of the 14 in whom exploratory operation failed to reveal the cause. The average follow-up period was sixty months. The results in this group were classified as excellent in 6 cases, satisfactory in 2 and unsatisfactory in 6. Every candidate for operation on a lumbar disk should have a complete orthopedic investigation before the operation is discussed with the patient. Myelography should be performed in every case in which there is doubt as to the diagnosis of ruptured disk. Spinal fusion should not be done at the time when the disk is removed. Exploration of the intervertebral foramen should be performed when no pathologic condition is observed within the spinal canal. Section of one or more sensory roots should be seriously considered in every case in which exploration does not disclose a ruptured risk.

Journal of Pediatrics, St. Louis

35:275-400 (Sept.) 1949

Effect of Specific Therapy on Common Contagious Diseases: Presidential Address. J. V. Cooke.—p. 275.
Chorioretinopathy Associated with Other Evidence of Cerebral Damage in Childhood: Syndrome of Unknown Etiology Separable from Congenital Toxoplasmosis. A. B. Sabin and H. A. Feldman.—p. 296.
Developmental Aspect of Child Vision. A. Gesell.—p. 310.
*Revascularization of Brain Through Establishment of Cervical Arteriovenous Fistula: Effects in Children with Mental Retardation and Convulsive Disorders. C. S. Beck, C. F. McKhann and W. D. Belnap.—p. 317.
Action of Aureomycin, of Polymyxin B, and of Streptomycin in Experimental Murine Pertussis. W. L. Bradford and E. Day.—p. 330.
Heredopathia Atactica Polyneuritiformis in Children: Preliminary Communication. S. Refsum, L. Salomonsen and M. Skatvedt.—p. 335.
Adrenocortical Insufficiency in Infants with Adrenogenital Syndrome: Clinical and Pathologic Study of 4 Cases. W. W. Zuelzer and A. Blum Jr.—p. 344.
Simultaneous Capillary and Venous Hemoglobin Determinations in Newborn Infant. L. Oettinger Jr. and W. B. Mills.—p. 362.
Small Bowel Obstruction in Infancy and Childhood: Radiologic Interpretation. C. Storch, B. Redner and R. D. Turin.—p. 366.

Revascularization of the Brain Through Cervical Arteriovenous Fistula.—Beck and his associates point out that mental retardation, convulsive disorders and sensory motor impairment are among the most common of pediatric problems. The gliosis characteristic of these conditions has been found to interfere with the blood supply to cerebral tissue. They have attempted correction of the deficiency in circulation by production of an anastomosis between the common carotid artery and the internal jugular vein, resulting in a redistribution and increase of blood flow to the brain. Eleven patients have been subjected to this procedure. Ten were children, ranging in age from 11 months to 14 years, who had mental retardation with or without a convulsive disorder. The eleventh was a 38 year old adult with mental deterioration and left hemiplegia. The authors present the histories of 4 of the 11 patients. Although the postoperative follow-up is limited to one, three and five months, benefit has been obvious. The remaining 7 patients were operated on just prior to the writing of this report and, therefore, their progress could not be evaluated. The authors believe this procedure represents the first successful attempt at correction of mental retardation on an organic basis. Complete restoration of normal function cannot be anticipated, but some return of function in the remaining viable neuronal tissue can be expected. The operation has proved safe. No difficulty has been encountered in reference to pulsating exophthalmos, increased intracranial pressure or cardiac hypertrophy. The fistula could be closed should untoward results appear. The procedure is to be considered as a new approach to a problem rather than as an acceptable and complete solution.

Journal of Urology, Baltimore

62:267-402 (Sept.) 1949. Partial Index

Chronic Paratyphoid Pyelonephritis Cured by Nephrectomy: Report of Case with Trial of Streptomycin. F. C. McLellan and H. J. Breeing.—p. 267.
Trocar Nephrostomy. G. Schimagel.—p. 286.
Liposarcoma of Kidney: Report of Early Case. B. Newman and T. Reed.—p. 292.
Wilms' Tumor: Review of Five Year Survivals in Literature and Report of 2 Cases. H. Q. Gahagan and H. M. Yearwood.—p. 295.
Clinical Use of Urecholine in Dysfunctions of Bladder: Preliminary Report. L. W. Lee.—p. 300.
Cystitis: Classification and Treatment; Discussion of Type Occurring After Transurethral Resection. C. P. Mathé.—p. 308.
Primary Lymphosarcoma of Urinary Bladder. C. C. Higgins.—p. 317.
Status of Irrigating Fluids for Transurethral Resection: Experience and Survey of Use of Various Solutions. G. L. Garske, O. C. Phares and T. H. Sweetser.—p. 322.
Priapism: Unusual Complication of Transurethral Prostatic Resection. G. Aaron and M. A. Robbins.—p. 328.
Bone Marrow Studies in Carcinoma of Prostate. E. P. Alyea and R. W. Rundles.—p. 332.
*Total Prostatovesiculectomy—Retropubic Approach. J. Memmelaar.—p. 340.
*Idiopathic (Schönlein) Purpura Associated with Hematuria. J. A. Lazarus.—p. 354.
Medical Management of Premature Ejaculation. L. Ayecock.—p. 361.
Inflammatory Reactions Involving Sperm and Seminiferous Tubules: Extravasation, Spermatic Granulomas and Granulomatous Orchitis. N. B. Friedman and G. L. Garske.—p. 363.
Fatal Embolism Following Urethrography. H. Gaudin.—p. 375.
New Cystoscope for Dilatation Purposes. S. A. Vest.—p. 378.

Retropubic Approach for Prostatovesiculectomy.—According to Memmelaar there is to date no generally accepted urologic procedure for radical treatment of carcinoma of the bladder or prostate which approaches the Wertheim operation for carcinoma of the cervix. The retropubic approach offers a relatively facile method of performing a total prostatovesiculectomy and removing malignant metastases related to the pelvic vessels. He describes and illustrates the technic for the retropubic approach and shows that it compares favorably with the enucleative operations. Since his initial experience with this approach in November 1947 approximately 30 patients with similar carcinomas have been subjected to this operation. To date all patients are living. The retropubic approach is desirable because it is more familiar to the average urologic surgeon than the perineal route. It permits a relatively facile and more definitive method of treating carcinoma of the prostate. The morbidity compares favorably with that for other prostatic operations. Although stress incontinence occurs in certain patients, it has disappeared in all after a relatively short period. In certain proportion of patients there develops a moderate degree of contracture of the bladder neck, but thus far they have responded without difficulty to the usual dilations.

Idiopathic Purpura Associated with Hematuria.—Lazarus reports a man aged 18, who had had four episodes of painless hematuria during the past four years accompanied by low backache, pain in the right loin and thigh, and subconjunctival hemorrhages. Each attack persisted approximately fourteen days and then subsided for intervals of six to twelve months. He was completely asymptomatic during intervals. In view of the absence of a primary lesion in the urogenital tract or of alterations in the hemopoietic system or blood-clotting mechanism, and because of arthralgia affecting several joints, the diagnosis was Schönlein's purpura with hematuria as one of the outstanding manifestations. Idiopathic purpura is a recurrent clinical entity, usually occurring in children and young adults and characterized by purpura associated with joint or visceral symptoms due to exudation of plasma and blood elements into the tissues. It is not accompanied with changes in the blood. When the predominant changes occur in the skin or conjunctivae the condition is called purpura simplex. Henoch's purpura is the term applied to the clinical complex in which

visceral symptoms predominate. Purpura associated with joint or muscle symptoms is called Schönlein's purpura. Hematuria may occur as a secondary or dominant symptom in any of the previously mentioned syndromes. Allergy tests in the aforementioned patient revealed sensitivity to rice, wheat, veal, chocolate, nuts, raw vegetables and fruit. Removal of these foods resulted in a prompt and complete abatement of all symptoms. The author ascribes the paucity of reports on this condition in the urologic literature to the fact that the majority of the patients come within the province of the internist, because of prevalence of symptoms other than hematuria. In some patients hematuria constitutes the chief symptom of the disorder. Failure to recognize the true nature of the disorder may lead to unnecessary and hazardous surgical procedures. Because many patients afflicted with this condition are allergic, appropriate skin tests must be made to ascertain the foods to which they are sensitive. Alarming hematuria may at times be stopped temporarily by the intravenous use of 5 to 10 cc. of a 1 per cent solution of congo red. The treatment of visceral and cutaneous manifestations must be along symptomatic lines.

Michigan State Medical Society Journal, Lansing

48:953-1080 (Aug.) 1949

Evaluation of Cardiac Patient as Surgical or Obstetrical Risk. I. D. Fagin.—p. 985.
Rhinoplasty and Nasal Respiration. E. J. Levitt.—p. 992.
Tennis Elbow. L. L. Swenson.—p. 997.
Venous Thrombosis and Pulmonary Embolism: Prophylaxis, Diagnosis and Treatment. R. R. Linton.—p. 999.
Surgery of Portal Hypertension: Portacaval Shunts and Two-Stage Method in Poor-Risk Patient. R. R. Linton and I. B. Hardy Jr. —p. 1005.
Arteriovenous Shunts for Revascularization of Ischemic Limbs. P. Jordan.—p. 1011.
Office Treatment of Lesions of Cervix. H. A. Ott.—p. 1013.
Good Psychiatry is Good Medicine. C. C. Burlingame.—p. 1019.
Methyl Testosterone for Migraine of Women. R. C. Moehlig and R. A. Gerisch.—p. 1025.
Rationale Therapy of Allergic Disease. W. Appel.—p. 1029.
Mesenteric Vascular Occlusion. R. E. Johnson.—p. 1032.

48:1081-1200 (Sept.) 1949

Rheumatic Fever and Rheumatic Heart Disease in Children: Diagnosis and Treatment. L. M. Taran.—p. 1121.
*Group A Streptococcal Infections and Rheumatic Fever. S. Rothbard. —p. 1126.
Physician and Community Action for Rheumatic Fever. G. M. Wheatley. —p. 1128.
Surgical Management of Peptic Ulcer. C. S. Kennedy.—p. 1133.
Public Health and Private Physician. A. E. Heustis.—p. 1137.
New Trends in Treatment of Allergic Diseases. G. L. Waldbott.—p. 1140.
Anesthesia—Weakest Link in Surgical Procedure. I. B. Taylor.—p. 1144.
X-Ray Diagnosis in Pediatrics. W. A. Evans.—p. 1148.
Adenocarcinoma of Fundus Uteri. C. S. Stevenson.—p. 1151.
Systemic Bacitracin in Surgical Infections. F. L. Meleney.—p. 1154.
Practical Uses of Physical Medicine. F. H. Krusen.—p. 1156.
Cancer Research. H. S. N. Greene.—p. 1161.
Importance of Preoperative Preparation of Patient in Surgery of Colon. L. S. Fallis.—p. 1162.
Political Socio-Economic Problems. L. H. Sehriver.—p. 1165.
Care and Treatment of Psychotic Patient. O. R. Yoder.—p. 1166.

Streptococcic Infections and Rheumatic Fever.—Rothbard studied 153 rheumatic and nonrheumatic patients who suffered 169 definite hemolytic streptococcic upper respiratory tract infections over a period of years. Group A streptococci caused 162 of these infections, group C, 6 and group G, 1. Of these infections 102 were uncomplicated, 29 were followed by purulent complications and 38 were followed by rheumatic fever, including 4 with purulent complications. Rheumatic recurrences developed seventeen times as a result of 54 streptococcic infections in 39 previously rheumatic patients. Primary attacks of rheumatic fever resulted from 21 of the 115 streptococcic infections suffered by 114 previously nonrheumatic patients. Rheumatic manifestations followed only those upper respiratory infections due to group A hemolytic streptococci. None of the 7 infections due to streptococci of group C and G had rheumatic sequelae, although 5 of these occurred in patients who had had rheumatic fever. Many of the rheumatic patients suffered a number of nonstreptococcic diseases, but in no instance was rheumatic fever observed following them. The rheumatic fever patients showed rises in antistreptolysin O, antifibrinolysin and typespecific antibodies more frequently than patients who developed purulent complications or those who made uneventful recoveries. This is added evidence that these group A streptococcic infections are closely related to rheumatic fever. Marked changes from the normal serum protein pattern were observed in both the rheumatic and nonrheumatic patients, but these abnormalities were more prolonged in the rheumatic patients. Nineteen of 110 young adult patients with scarlet fever developed pronounced electrocardiographic abnormalities similar to those seen in patients with active rheumatic fever; 8 of them had definite attacks of acute rheumatic fever; 4 developed mild and transitory rheumatic-like signs and symptoms, and 7 had no symptoms of rheumatic fever. The difference in these 3 groups was one of intensity, but all suffered from the same tissue injury that is characteristic of rheumatic fever. Although no adequate explanation of the exact part played by group A streptococci in initiating rheumatic fever is available, the established fact should not be overlooked that such potentially malignant diseases as scarlet fever, streptococcic tonsillitis and pharyngitis act as precursors of rheumatic fever.

Nebraska State Medical Journal, Lincoln

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Surgical Principles in Care of the Severly Burned. C. W. McLaughlin Jr. and R. M. Cochran.—p. 280.
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Management of Massive Bleeding from Peptic Ulcers. E. B. Reed. —p. 314.
Side Effects of Antihistamine Drugs. M. H. Brodkey.—p. 317.
Routine Exploration of Common Duct Following Cholecystectomy for Cholelithiasis. S. J. Carnazzo, S. T. Mangimelli and D. S. Roccaforte. —p. 320.
Differential Diagnosis of Acute Abdominal Conditions. W. P. Kleitsch. —p. 322.
False Fear of Disc Surgery. K. W. Sheldon.—p. 326.
Post-Resection Reconstruction of Thoracic Esophagus. S. E. Potter. —p. 329.

New England Journal of Medicine, Boston

241:351-394 (Sept. 8) 1949

The Professions in the Society of Today. R. Pound.—p. 351.
Pseudomyxoma Peritonei Associated with Cholesterosis. C. G. Tedeschi, E. A. Gaston and E. A. Brown.—p. 357.
Ventricular Strain and Ventricular Hypertrophy. D. Littmann.—p. 363.
*Conditioned-Reflex Treatment of Alcoholism: I. Its Rationale and Technic. J. Thimann.—p. 368.
Resuscitation. S. C. Wiggin, P. Saunders and G. A. Small.—p. 370.
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Severe Pyelonephritis, B. Pyocyaneus.—p. 381.

241:395-434 (Sept. 15) 1949

Spontaneous Perforation of Esophagus: Report of 3 Cases Successfully Treated Surgically. J. P. Lynch.—p. 395.
Hyperparathyroidism with Nephrolithiasis: Report of Case with Parathyroid Tumor Located Within the Thymus. M. Abrams, A. M. Rutenburg, M. F. Lesses and S. L. Gargill.—p. 401.
Conditioned-Reflex Treatment of Alcoholism: II. Risks of Its Application, Its Indications, Contraindications and Psychotherapeutic Aspects. J. Thimann.—p. 406.
Management of Abnormal Uterine Bleeding. G. V. S. Smith.—p. 410.
Resuscitation. S. C. Wiggin, P. Saunders and G. A. Small.—p. 413.
Portal Cirrhosis of Liver, Alcoholic Type. Esophageal and Gastric Varices, with Ulceration and Hemorrhage into Gastrointestinal Tract. —p. 420.
Congenital Defect of Mesentery, with Volvulus and Perforation of Ileum. —p. 423.

Conditioned Reflex Treatment of Alcoholism.—Thimann discusses the rationale and technic of the conditioned reflex therapy of alcoholism, which was begun at his hospital seven years ago. The treatments are given in the morning, because patients react better when fasting and rested. The preliminary medication consists of 10 to 20 mg. of amphetamine sulfate and 1 mg. of strychnine sulfate followed by a capsule containing 0.06 to 0.15 Gm. of emetine hydrochloride with 1 to 3 glasses of tepid water. Simultaneously, 0.05 to 0.15 Gm. of emetine hydrochloride is administered hypodermically. These dosages are easily obtained from a 7.2 per cent solution of emetine hydrochloride supplemented with 1 per cent pilocarpine hydrochloride and 4.8 per cent ephedrine sulfate. Of

this solution, 0.6 cc. contains 50 mg. of emetine hydrochloride. Immediately prior to the expected emesis the patient is exposed to the sight, smell and taste of the alcoholic beverages that he preferred when on a spell of drinking. The drinks are offered in undiluted form ("straight") and in the usual dilutions ("highballs"). These sessions last twenty to thirty minutes and are repeated daily for five or six days. They are followed by six or seven preventive one-day treatments, so-called reinforcements, given at intervals ranging from four to twelve weeks. Thus, the application of the initial series together with the reinforcements takes approximately a year. Some patients later request reinforcing treatments. Experience is required to apply the treatment safely and efficiently. Caution is indicated because of the great range and variety of the patient's reaction to the conditioned and unconditioned stimuli, innumerable imponderable factors decisive for the success or failure of the treatment, and the narrow margin between underdosage and overdosage.

261:435-472 (Sept. 22) 1949

Home Accidents in Massachusetts: Study in Epidemiology of Trauma. H. L. Roberts and J. E. Gordon.—p. 435.
Needs for Inpatient Care and Treatment of Mentally Ill Children in Commonwealth of Massachusetts. T. P. Krush.—p. 441.
Public-Health Heart Program—First Report. E. E. Kattwinkel, V. A. Getting, E. M. Morris and others.—p. 446.
*Relation of Cavity to Development of Streptomycin-Resistant Tubercle Bacilli in Pulmonary Tuberculosis. R. S. Mitchell.—p. 450.
Child Health Services in Massachusetts. J. M. Baty and L. Snedeker.—p. 454.
Rheumatic Heart Disease, with Mitral Stenosis. Multiple Pulmonary Embolism and Infarction, Massive, Old and Recent. Cardiac Hypertrophy, Right Ventricle (Cor Pulmonale). Massive Mural Thrombus, Left Auricle, Obliterating Mitral Valve and Extending into Pulmonary Vein.—p. 462.
Abdominal Abcess. Generalized Peritonitis.—p. 465.

Streptomycin Resistance in Pulmonary Tuberculosis.—Mitchell treated 116 patients with active pulmonary tuberculosis with streptomycin at Trudeau Sanatorium. The daily dose varied from 0.5 to 2 Gm. per day, but was usually 1 Gm. per day. The drug was given in two daily intramuscular injections at twelve hour intervals. Positive sputum or gastric cultures were obtained from 100 of the 116 patients at some time after streptomycin therapy was completed. In these 100 cases in vitro resistance to the drug developed as follows: in 20 of 51 patients with pretreatment roentgenographic evidence of cavity in whom no satisfactory collapse measure was applied coincidentally; in 3 of 29 patients without cavity before therapy, and in 2 of 20 patients with cavity before therapy but with a coincident satisfactory collapse measure. The mechanism of streptomycin resistance is not clear. The amount of caseation may have an important bearing on the phenomenon. Resistance is theoretically more likely to develop when bacilli are exposed to low concentrations of the drug. Such a low concentration could be due either to the impaired blood supply in caseous tissue or to the presence of excessive numbers of bacilli, or to both. Careful selection of cases in which drug resistance is most unlikely to develop may significantly reduce the risk of drug resistance in chronic pulmonary tuberculosis. Coincident utilization of the mechanical effects of collapse and the immunologic benefits of streptomycin should be seriously considered.

New Jersey Medical Society Journal, Trenton

46:413-458 (Sept.) 1949

Diagnostic Problems of Poliomyelitis in Children. H. Simon, E. L. Smith and H. O. Bell.—p. 416.
Sporotrichosis. M. H. Holland and D. A. Mauriello.—p. 419.
Non-Surgical Orthopedic Management of Rheumatoid Arthritis. D. E. Kavanaugh.—p. 421.
Toxic Reaction to Streptomycin. H. Halprin, F. Turner, E. Davidson and P. Tucci.—p. 425.
Psychiatry in Relation to Obstetrics. L. J. Thompson.—p. 427.
Tendon Sheath Involvement in Rheumatic Diseases. I. L. Sperling.—p. 430.
Post-Spinal Headache: Treatment with Desoxycorticosterone Acetate. N. Asbell.—p. 433.
Convalescent Care of Rheumatic Fever in Home. A. D. Dennison Jr.—p. 437.
Dermatitis Herpetiformis: Report of 2 Cases in Children Treated with Aureomycin. M. H. Saffron.—p. 440.
Surgery of Gall Bladder and Bile Ducts: Report of 973 Cases. M. Danzis.—p. 442.

New York State Journal of Medicine, New York

49:2095-2222 (Sept. 15) 1949

Recent Developments in Physiologic Study of Patients with Chest Diseases. R. A. Bruce, F. W. Lovejoy Jr., P. N. G. Yu and others.—p. 2133.
*Encephalitis in Children with Electroencephalographic Changes. B. M. Shinners, R. F. Krauss and B. Rochester.—p. 2140.
Cerebrospinal Fluid Examination in Diagnosis of Multiple Sclerosis. T. J. C. von Storch, A. H. Harris and T. Lawyer Jr.—p. 2145.
Neuritis and Neuronapathy in Industrial Medicine. O. C. Perkins.—p. 2149.
Cerebral Apoplexy: Mechanism and Differential Diagnosis. H. M. Zimmerman.—p. 2153.
Rate of Erythrocyte Regeneration in Pernicious Anemia. G. W. Clark.—p. 2158.
Sympathectomy in Treatment of Certain Vascular Lesions with Report on Its Use in Post-Thrombotic Syndrome. G. H. Pratt.—p. 2161.
Torsion of Appendices Epiploicae. P. Ladin.—p. 2168.
Neuropsychiatric Diagnosis. N. Bigelow.—p. 2172.
Use of Red Blood Cell Paste in Treatment of Chronic Leg Ulcers. W. C. L. Diefenbach.—p. 2174.
Penicillin in Cardiovascular Syphilis. H. I. Russek, F. P. Nicholson and B. L. Zohman.—p. 2176.

Encephalitis in Children.—Shinners and co-workers report 5 children, 3 boys and 2 girls between the ages of 22 months and 8 years, with encephalitis. The condition was associated in 4 of the patients with common diseases of childhood, namely, measles, mumps, chickenpox and herpes simplex. In 1 case the encephalitis could not be related to any known preceding contagious disease. The electroencephalograms of these 5 children showed pronounced electrical abnormalities of brain activity, associated at times with a varied clinical picture. During the acute encephalitis high voltage 1 to 3 per second wave activity was present. These brain electrical potentials usually improved as the clinical state of the patient improved, but some of the wave abnormalities persisted. They may persist indefinitely and may produce future convulsive activity and behavior problems. Childhood diseases can produce permanent cerebral damage. Many cases of the so-called idiopathic epilepsy may be the result of an early, simple childhood disease.

North Carolina Medical Journal, Winston-Salem

10:393-468 (Aug.) 1949

Century and Half of Medicine in North Carolina. W. de B. MacNider and H. A. Royster.—p. 393.
Thumbnail Sketches of Eminent Physicians: Sir William Osler. C. D. Leake.—p. 398.

Pediatrics, Springfield, Ill.

4:269-390 (Sept.) 1949

Current Trends in Hematology. W. W. Zuelzer.—p. 269.
Clinical Concept of Poliomyelitis. E. B. Shaw and H. E. Thelander.—p. 277.
Balance and Electrocardiographic Studies in Child with Potassium Deficiency. W. M. Wallace and F. C. Moll.—p. 287.
Rupture of Spleen in Erythroblastotic Infant. E. L. Slotkowski and A. M. Hand.—p. 296.
Dynamics of Circulation in Infantile Malnutrition. E. Kerpel-Fronius and F. Varga.—p. 301.
Psychologic Aspects of Poliomyelitis. M. A. Seidenfeld.—p. 309.
*Influenzal Meningitis; Recovery of Case of Four Weeks' Duration with Use of New Drug, Polymyxin B (Aerosporin.). B. M. Kagan.—p. 319.
*Pulmonary Tuberculosis in Children Treated with Streptomycin. E. T. McEnery, H. C. Sweany and G. C. Turner.—p. 323.
Acute Pulmonary Aspergillosis: Report of Case. A. J. Hertzog, T. S. Smith and M. Goblin.—p. 331.
Influenzal Vaccination in Infants and Children. M. G. Peterman and V. Kores.—p. 337.
Management of Intrathoracic Nerve Tumors in Young Children: Report of 4 Cases. J. C. Jones and D. B. Effler.—p. 342.
Nevoxantho-Endothelioma with Ocular Involvement. H. Blank, P. G. Eglick and H. Beerman.—p. 349.
Bronchiectasis in Childhood: III. Prophylaxis, Treatment and Progress with Follow-Up Study of 202 Cases of Established Bronchiectasis. C. E. Field.—p. 355.

Polymyxin B in Influenzal Meningitis.—Kagan reports 1 male infant aged 13 months with influenzal meningitis. The diagnosis was made early, and streptomycin and sulfadiazine were administered in large doses. After two weeks, when progress was unsatisfactory, the infant was given Alexander's specific rabbit anti-influenzal serum in addition to continued treatment with streptomycin and sulfadiazine. The medicaments were discontinued after four weeks when a fatal termination seemed inevitable. A new antibiotic, polymyxin B hydrochloride (aerosporin) was then administered. Seven milligrams (70,000 units) in 1 cc. isotonic solution of sodium chloride

was given intramuscularly every four hours. The first day of this treatment 1 mg. (10,000 units) in 0.5 cc. isotonic solution of sodium chloride was given intrathecally as well, and 3.5 mg. (35,000 units) of the drug was given by this route on the following days. On the fourth day the child seemed to be more toxic, but improvement thereafter was rapid and there were no other symptoms or signs of toxicity which might be attributed to the polymyxin. The drug was discontinued after six days of administration. The infecting strain of Hemophilus influenzal type B was resistant in vitro to 80 units of streptomycin and partially inhibited by sulfadiazine, but was sensitive to 0.43 units per cubic centimeter of polymyxin B hydrochloride. Reexamination of the patient three months later revealed that he was functioning intellectually on a low normal level for his age. There were no neurologic or other physical defects.

Streptomycin in Pulmonary Tuberculosis.—McEnery and co-workers treated 21 children, 8 boys and 13 girls between the ages of 8 months and 13 years, 18 with primary progressive tuberculosis and 3 with adult type of pulmonary tuberculosis, with streptomycin. The majority of the patients were given 0.5 Gm. of the drug in divided doses, twice daily for one hundred twenty days. The dose later was decreased to 0.3 Gm. once daily, and the duration of the treatment to ninety days. The use of streptomycin in the treatment of children with primary progressive tuberculosis has uniformly lessened and in most cases obliterated the toxic manifestations of the disease and has reversed the general downward clinical course of the disease. The physical signs improved, and roentgenologic changes followed the clinical and physical improvement. Conversion of sputum from positive to negative was completed in four to five months in 16 of the 18 patients with primary progressive lesions. The groups of 3 patients with the adult type of pulmonary tuberculosis was too small to be statistically significant, but from the observations on these children it is believed that the results were similar to those in chronic pulmonary tuberculosis in adults treated with streptomycin. Two of the patients were only temporarily improved. One of these died, and the other is now in a terminal stage of the disease. The third child is awaiting surgical treatment. Streptomycin therapy should not be considered a cure-all; it is still in the experimental stage, and a larger number of cases will have to be observed over a longer period of time.

Pennsylvania Medical Journal, Harrisburg

53:1161-1320 (Aug.) 1949

Dilemma of Otolaryngology. L. G. Richards.—p. 1177.
Pelvic Infection—Present Status of Treatment. M. DeW. Pettit.—p. 1183.
Recent Trends in Enucleation: Modern Implants and Prostheses. B. F. Souders.—p. 1188.
Retropubic Prostatectomy: Critical Evaluation of Newest Approach to Prostate. A. F. Kaminsky.—p. 1192.
Psychosomatic Aspects of Nutritional Therapy. H. T. Kelly.—p. 1198.

Philippine Medical Association Journal, Manila

25:333-374 (July) 1949

Thoracoplasty in Pulmonary Tuberculosis in Philippines. G. R. Hebron and R. Intengan.—p. 333.
Nutrition from Standpoint of Medical Practitioner. I. Concepcion.—p. 343.
Malaria Problem in Philippines Today. F. J. Dy.—p. 347.
Occupational Gasoline Poisoning (Report of 2 Acute Fatal Poisonings). G. D. Dizon and L. Pardo.—p. 351.
Recent Trends of Psychiatry in America. P. C. Bautista.—p. 361.

Proc. Staff Meet. Mayo Clinic, Rochester, Minn.

24:477-500 (Sept. 14) 1949

*New Drug in Treatment of Radiation Sickness. J. W. Beeler, J. H. Tillisch and W. C. Popp.—p. 477.
Treatment of Adults for Epilepsy: I. Toxic Effect of 3-Methyl 5-5-Phenylethylhydantoin. A. A. Bailey and R. E. Worden.—p. 483.
Id.: II. General Principles. A. A. Bailey.—p. 486.
Studies on Influence of Streptomycin and Other Antibiotic Agents on Some Enzymes of Mycobacterium Smegmatis. E. A. Zeller, C. A. Owen Jr. and A. G. Karlson.—p. 490.
Cardiac Clinics: CXXX. Myocardial Disease in Acute Poliomyelitis. R. J. Boucek, A. A. Bailey, H. B. Burchell and J. E. Edwards.—p. 493.

New Drug in Treatment of Radiation Sickness.—Beeler and co-workers treated 82 patients with radiation sickness as a complicating factor during irradiation treatment for malignant conditions, by oral administration of dimenhydrinate (beta-dimethylaminoethyl benzohydryl ether 8-chlorotheophyllinate, dramamine). A control series of 23 patients with radiation sickness believing that the therapeutic drug was being administered, were given placebos. The parallelism between the lassitude, nausea, vomiting, anorexia and malaise of seasickness and airsickness and those of radiation sickness suggested a trial with dimenhydrinate. The dosage was varied in the beginning of the series to determine the most effective therapeutic plan. Maximal effectiveness was obtained when 100 mg. of dimenhydrinate was given thirty to sixty minutes before irradiation treatment and the dose was repeated one and one-half hours after treatment and again in three hours, making a total of 300 mg. of the drug. Some patients required a total dose of only 200 mg., others needed 400 mg. There was cessation of vomiting, decided relief of nausea and of prostration in 21 patients. Vomiting has been eliminated but occasional nausea persisted in 44 patients. Symptoms were reduced but nausea and vomiting were present in sufficient degree to produce mild discomfort in 4 patients. Only slight or no relief was obtained in 13 patients. The 23 control patients showed a significantly lower percentage of relief of symptoms than did the group receiving dimenhydrinate. Drowsiness was an objectionable feature in 15 patients and "bad taste" in 8 patients treated with dimenhydrinate. In 4 of the patients with poor results there was a failure to retain and absorb the tablets because of intervening vomiting. Dimenhydrinate is an inexpensive drug which can be safely used both as a therapeutic and a prophylactic agent in the treatment of radiation sickness.

Psychiatric Quarterly, Utica, N. Y.

23:203-414 (April) 1949

Nature of Intuition. E. Berne.—p. 203.
Somatic Procedures for Relief of Anxiety: Review. H. Freed, E. Spiegel and H. T. Wycis.—p. 227.
Quest for "Psychics" and "Psychical" Phenomena in Psychiatric Studies of Personality. J. Ehrenwald.—p. 236.
Pseudoneurotic Forms of Schizophrenia. P. Hoch and P. Polatin.—p. 248.
From the Autobiography of a Liar: Toward Clarification of Problem of Psychopathic States. B. Karpman.—p. 277.
Rational Approach to Psychiatric Nosology. P. Haun.—p. 308.
Physiology of Hypnosis: I. Review of Literature. B. E. Gorton.—p. 317.
Statistical Analysis of Ages of First Admissions to Hospitals for Mental Disease in New York State. B. Malzberg.—p. 344.

Puerto Rico J. Pub. Health & Trop. Med., San Juan

25:1-152 (Sept.) 1949

Experience in Surgical Treatment of Diseases of Thyroid Gland. J. Noya Benitez, F. L. Raffucci and J. R. Gonzalez Guisti.—p. 1.
Recent Developments in Therapy of Human Brucellosis. E. A. Molinelli, D. Ithurralde, G. Basso and others.—p. 29.
Short Note on Brucella Fractionation. M. Ruiz Castañeda.—p. 72.
*Treatment of Taenia Saginata with Atabrine. F. Hernández Morales.—p. 78.
*Treatment of Taenia Saginata with Hexylresorcinol Emulsion Administered into the Duodenum. F. Hernández Morales and D. S. Stevenson.—p. 87.
Fermentation Reactions with Dried Paper Discs Containing Carbohydrate and Indicator. O. Bonilla Soto.—p. 96.

Quinacrine in Treatment of Taenia Saginata Infestation.—Hernández Morales treated patients who had recently passed proglottides of Taenia saginata. The patients were instructed to have a light lunch and supper and to take 30 Gm. of magnesium sulfate at 3 p. m. of the day before treatment. On the morning of treatment, the patients reported at the clinic in a fasting state. Adults were given six to eight tablets of quinacrine hydrochloride, two tablets every five minutes with a glass of water to which 6 Gm. of sodium bicarbonate was added to prevent nausea and vomiting induced by the drug. Two to three hours later a dose of magnesium sulfate, dissolved in a sirup of citric acid and water, was given by mouth. Usually two or three bowel movements occurred during the first hour after the purgative had been given, these stools being examined immediately. After several bowel movements the patients were permitted to go home. The scolex was recovered in 13 of the 24 patients treated. Only 1 of the remaining 11 patients passed segments two months after treatment. Quinacrine hydrochloride was effective in all but 1 of the patients treated. In 11 of the 13 patients in whom the scolex was recovered, the whole taenia with the scolex attached was passed.

Treatment of Taenia Saginata with Hexylresorcinol Emulsion.—Hernández Morales and Stevenson treated patients infested with Taenia saginata with an emulsion prepared from 1 Gm. of crystalline hexylresorcinol, 1 Gm. of acacia and 30 cc. of water, administered directly into the duodenum through a duodenal tube in situ. No dietary restrictions or purgatives were prescribed prior to therapy. The total number of patients treated in this manner was 28. Cure was obtained in 26. The absence of toxic effects and the fact that no purgatives or dietary restrictions are needed make hexylresorcinol in the form of an emulsion the most effective treatment against T. saginata.

Radiology, Syracuse, N. Y.

53:157-312 (Aug.) 1949

*Spontaneous Pneumothorax: Study of 105 Cases. L. A. Rottenberg and R. Golden.—p. 157.
Bronchial Dynamism. S. Di Rienzo.—p. 168.
Correlation Between Roentgenologic and Pathologic Findings in Chronic Pneumonitis of Cholesterol Type. L. L. Robbins and R. C. Saiffen. —p. 187.
*Active Bronchopulmonary Lithiasis. E. Freedman and J. H. Billings. —p. 203.
*"Egg Shell" Calcifications in Silicosis. C. E. Grayson and H. Blumenfeld.—p. 216.
Intrathoracic Goiter: Its Incidence, Symptomatology, and Roentgen Diagnosis. J. J. McCort.—p. 227.
Orthographic Pelvimetry. P. C. Hodges and R. L. Nichols.—p. 238.
Hydatid Disease. S. F. Oosthuizen and M. H. Fainsinger.—p. 248.
Spontaneous Hemopneumothorax: Etiological Considerations and Case Report. J. Solovay.—p. 256.
Arteriovenous Aneurysm of Lung: Case Report. A. Ettinger, H. Magendanz and E. A. Russo.—p. 261.
Volvulus of Sigmoid: New Radiologic Sign. M. A. Bellini.—p. 268.
Cauda Equina Syndrome Due to Silent Rectal Carcinoma. R. J. Gross. —p. 271.

Spontaneous Pneumothorax.—Rottenberg and Golden report on 105 consecutive cases of spontaneous pneumothorax. In 8 cases the pneumothorax was complicating a current intrathoracic disease process—6 cases of pulmonary tuberculosis, 1 of pleural carcinomatosis and 1 of suppurative pleurisy. The remaining 97 patients were apparently healthy persons. Their average age was 30 years, and the majority were male. Chest pain and dyspnea were the two most important symptoms. The former was limited to the side involved and often radiated to the shoulder, back or abdomen. The pain came suddenly and frequently was severe enough to terrify the patient, but it usually subsided within two days. The dyspnea also disappeared after a few days of bedrest. In 6 of the 97 patients the collapse was bilateral. The average time required for apparently complete reexpansion was four weeks. Sixteen patients had one recurrence, and 8 had two or more. The average time between attacks was 23.2 months. Forty-six patients had roentgenographic evidence of pleural effusion, which was gradually and spontaneously resorbed. Massive hemothorax requiring thoracocentesis developed in 3 patients. The prognosis in simple spontaneous pneumothorax (excluding complications) is excellent. The forms of the disease which involve danger to life are tension pneumothorax, hemopneumothorax and bilateral pneumothorax. Of the 2 deaths that occurred in this series 1 was due to tension pneumothorax and the other to massive hemothorax.

Bronchopulmonary Lithiasis.—Freedman and Billings conclude, from the discovery of 7 cases of bronchopulmonary lithiasis in a hospital of 310 beds in the course of one year, that the condition is not as rare as might be assumed from the scant literature on this subject. Their review of the English and American material published since 1900 disclosed only 96 cases. The authors report 7 patients with active bronchopulmonary lithiasis; in 6 the disease was proved at operation and subsequent pathologic examination while in the seventh the stones were expectorated. The clinical picture may vary from complete absence of signs or symptoms to those of a severe or critical illness. Practically every pathologic condition which may develop in the chest may be simulated. Bronchopulmonary lithiasis should be included in differential diagnosis of bronchial obstruction, pulmonary suppuration and hemorrhage associated with paroxysmal attacks of cough when the chest roentgenogram shows calcific shadows in the region of consolidated areas. Broncholiths may develop within the bronchi or may originate outside the bronchi, with subsequent perforation into the air passages. In the majority of cases broncholiths are due to perforation of calcified tuberculous lymph nodes. The roentgen changes found in broncholiths may simulate carcinoma of the lung, chronic lung abscess, bronchiectasis with atelectasis and chronic pneumonitis as well as fungoid disease. Laminagraphy is an important diagnostic aid in bronchopulmonary lithiasis, as it may demonstrate the stone perforating the bronchial wall or lying in the lumen of the bronchus. Early recognition and treatment of this condition may prevent the serious complications caused by bronchial obstruction, pulmonary suppuration and hemorrhage.

"Egg Shell" Calcifications in Silicosis.—Grayson and Blumenfeld call attention to the characteristic calcium densities that occur in chest roentgenograms of men having silicosis. These shadows are seen as more or less regular rings in the hilar or mediastinal regions of the chest. They have been designated as "egg shell" or "mulberry" calcifications. Data on 200 patients with silicosis are reviewed. Their derivation from a mining territory in which there was no crowding of the population may explain the low incidence of tuberculosis in these silicotic patients. In 88 cases there were sufficient data for approximate dust exposure statistics. There was a total of 40 cases with egg shell calcifications. In 3 instances there was only a note that the man had been a hard rock miner, and these cases were not included in the group of 88. The 37 cases with egg shell calcifications are compared with the remaining 51 with no visible hilar calcifications. Studies of these patients suggest a hypothesis regarding the egg shell calcification. These calcium deposits occur in silicotic patients as the result of silica without superimposed tuberculous infection or, probably, any other infection. Silicotic material predominates, and the common denominator is silicosis. These calcifications occur long after the original exposure, especially in milder cases; they are not seen in severe cases terminating in death within a few years of exposure. The shell calcifications occur in previously existing lymph nodes but not in lung tissue. The calcium deposition begins diffusely throughout the node but later becomes more prominent beneath a heavy capsule that forms around the node. Though the peculiar configuration of the calcium deposit seems to be characteristic of and unique to silicosis, it cannot be stated that it might not occur in chronic, noncaseating lymphadenitis of other origin. No other causes have been reported with any reasonable supporting evidence. The presence of egg shell calcifications in lymph nodes indicates silicosis.

Review of Gastroenterology, New York

16:671-742 (Sept.) 1949

New Physiological and Clinical Studies on Secretion of Mucin in Human Stomach. G. B. J. Glass.—p. 687.
Technic of Abdominothoracic Total Gastrectomy Using Graham Method of Esophagojejunal Anastomosis. A. J. A. Campbell and S. Mikal. —p. 702.
Biotoxic Intestinal Conditions of Acid Fermentation Type. A. Bassler. —p. 708.
Review of 5 Cases of Pancreatic Disease. T. S. Heinecken, W. Moeckel, J. De Gerome and A. Tezas.—p. 716.
*Distaste for Smoking: Early Symptom in Virus Hepatitis. S. Leibowitz. —p. 721.

Distaste for Smoking an Early Symptom of Virus Hepatitis.—Leibowitz noticed a distaste for smoking of tobacco in the early stage of acute virus hepatitis in the patient who was previously a regular smoker. This distaste is fairly abrupt in onset. It is associated with an altered unpleasant "musty" or "bad" taste, although smoking was previously a source of pleasure. The symptom differs from the rather common reaction on the part of many smokers who cease smoking when "colds," sore throats or any respiratory infection develops. In the latter instance, the reason for ceasing to smoke is either the irritation of a sore throat or a decreased ability to taste or smell the tobacco, not a newly acquired positive distaste of an unpleasant nature. The author noticed this distaste for smoking in 16 of 24 smokers during their early stage of acute virus hepatitis.

Rocky Mountain Medical Journal, Denver

46:697-792 (Sept.) 1949

Anterior Resection or Abdominoperineal Proctosigmoidectomy for Carcinoma of Rectum. H. E. Bacon and H. D. Trimpi.—p. 716.
Purulent Meningitis in Childhood. F. H. Wright.—p. 718.
*Changing Conceptions in Management of Carcinoma of Left Portion of Colon. B. M. Black.—p. 726.
Use and Abuse of Spinal Puncture and Cerebrospinal Fluid Studies. A. C. Johnson.—p. 730.
Surgical Diseases of Thyroid Gland. S. B. Childs.—p. 734.
"Eleoma" of Rectum. W. B. Swigert.—p. 739.
Botulism in Human Beings from Home and Commercially Canned Foods. D. E. Johnson and G. W. Styles.—p. 740.
*Use of Nisulfazole in Treatment of Ulcerative Colitis. C. B. Wills.—p. 743.
Remote Recording of Physiological Date by Radio. N. J. Holter and J. A. Generelli.—p. 747.

Management of Carcinoma of Descending Colon.—Black states that segmental resection with primary anastomosis has largely replaced exteriorization operations for the management of lesions of the descending colon. The conditions necessary for safe primary intraperitoneal anastomosis are adequate blood supply to the cut ends of the bowel, no tension on the suture line, no obstruction and no inflammatory changes in the wall of the bowel. Some type of exteriorization remains the procedure of choice when such conditions are not present. The standard method of treatment of lesions of the rectosigmoid and rectum is the single stage combined abdominoperineal resection. The question of preserving fecal continence is being increasingly raised, and there is reason to believe that low anterior resection for higher lesions and that some type of combined abdominoendorectal or endoanal operation for lesions situated 7 to 11 cm. above the dentate margin will be increasingly employed. Miles's operation remains the treatment of choice for lesions of the lower part of the rectum. The mortality rate associated with the segmental removal of the descending colon is now approximately 3 per cent, while that associated with combined abdominoperineal resection is approximately 5 per cent.

Paranitrosulfathiazole in Ulcerative Colitis.—Wills reports the use of paranitrosulfathiazole (nisulfazole®), which is 2-(nitrobenzenesulfonamido) thiazole, in 24 cases of ulcerative colitis. The drug was supplied in two forms, tablets of 0.3 Gm. with 50 mg. ascorbic acid for oral administration, and as a 10 per cent suspension in pectin for rectal instillation. The term ulcerative colitis, as used in this report, is synonymous with idiopathic ulcerative colitis, nonspecific colitis and thromboulcerative colitis. In differentiating bacillary dysentery and ulcerative colitis most observers agree that chronic bacillary dysentery is identical with chronic ulcerative colitis and that many cases of ulcerative colitis are an aftermath of acute bacillary dysentery. The cases on which this report is based represent all stages of the disease. The paranitrosulfathiazole was administered in the form of rectal instillations of 1 to 3 ounces (30 to 90 cc.) by means of a catheter and bulb syringe. Patients in whom the involvement was confined to the rectum and lower portion of the colon were treated only with the suspension of the drug. Patients in whom roentgenograms showed involvement of the entire colon, often including the terminal ileum, were treated with paranitrosulfathiazole tablets orally, 4 to 6 Gm. daily, and with the suspension of the drug rectally. All patients classified as being in the second and third stages of the acute phase showed prompt improvement. Nine of the 24 patients have shown little, or only temporary, improvement with treatment with paranitrosulfathiazole. Of these, 4 have had ileostomies, with 1 fatality, and 4 others are likely candidates for surgical treatment. The author believes that despite the small number of cases in which the drug has been used, enthusiasm is warranted regarding its efficacy. Since most ulcerations showed prompt exacerbation when paranitrosulfathiazole therapy was discontinued, the drug cannot be considered a cure, but its efficacy in controlling the active stages of ulcerative colitis is unquestioned. It is of particular value in cases in which all, or most, of the involvement is confined to the rectum and lower sigmoid. Those that show involvement of the entire colon and evidence of chronic damage and polypoid hyperplasia fail to display improvement. There were no toxic reactions or ill effects, regardless of the amount of paranitrosulfathiazole suspension used or the length of time it was employed. It appears to be a valuable adjunct to the preoperative and postoperative care of patients requiring surgical intervention.

Surgery, St. Louis

26:331-566 (Sept.) 1949. **Partial Index**

*Rate of Conversion of Administered Inorganic Radioactive Iodine into Protein-Bound Iodine of Plasma as Aid in Evaluation of Thyroid Function. D. E. Clark, R. H. Moe and E. E. Adams.—p. 331.
*Potassium Deficiency in Surgical Patients. H. T. Randall, D. V. Habif, J. S. Lockwood and S. C. Werner.—p. 341.
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Venous Pressures in Saphenous System in Normal, Varicose and Postphlebitic Extremities; Alterations Following Femoral Vein Ligation. R. Warren, E. A. White and C. D. Belcher.—p. 435.
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Excision of Mandible for Neoplastic Disease: Indications and Techniques. D. P. Slaughter, E. H. Roeser and W. F. Smejkal.—p. 507.
Quarterectomy—Its Application in Malignant Melanoma. R. F. Bowers.—p. 523.
Studies in Acute Cholecystitis: I. Surgical Management and Results. J. E. Dunphy and F. P. Ross.—p. 539.
Experimental Study of Effect of Heparin on Local Pathology of Burns. R. S. McCleery, W. R. Schaffarzick and R. O. Light.—p. 548.

Rate of Conversion of Radioactive Iodine.—Clark and co-workers studied the rate of conversion of orally administered radioactive iodine into the protein-bound iodine of the plasma in 78 patients, 28 with hyperthyroidism, 22 with euthyroidism, 19 with hypothyroidism and 9 with hypertension and cardiac disease with an elevated basal metabolic rate. Patients who were thought to have normal or low thyroid activity received 0.5 to 1.5 millicuries. Persons who had an elevated basal metabolic rate and clinically classic hyperthyroidism were given either a large tracer dose or a therapeutic amount of radioactive iodine varying from 3 to 8 millicuries. The ratio of radioactivity in counts per second in the protein fraction to the total plasma radioactivity in counts per second was designated as the conversion ratio. In the patients with euthyroidism the conversion ratio ranged from 13 to 42 per cent, with an average of 24 per cent; in those with hyperthyroidism it was 45 to 96 per cent, with an average of 78.5 per cent. Patients in whom the conversion ratio is 50 per cent or greater are considered to have hyperactivity of the thyroid gland. There was no overlapping between the hyperthyroid group and the euthyroid group. The range of the conversion ratio in hypothyroidism or myxedema was 2.7 to 12.5 per cent, with an average of 6 per cent. Patients with a conversion ratio of 10 per cent or less are considered hypothyroid. All 7 patients with severe cardiac disease but an elevated basal metabolic rate had a low conversion ratio. The 2 patients with hypertension but no apparent cardiac disease had a conversion ratio in the normal range. The results suggest that the rate of incorporation of radioactive iodine into protein-bound iodine of the plasma may be a useful guide to thyroid activity.

Potassium Deficiency in Surgical Patients.—Randall and co-workers studied the potassium balance and serum potassium levels in three groups of patients observed in a surgical metabolism unit. One group was maintained on orally ingested food until operation and then carried on parenterally given fluids, including amino acids but without added potassium, for the operative day and four days thereafter. The second group was given the same fluids parenterally, including amino acids,

but for three days preoperatively as well as postoperatively. The third group was similar to the second except for the addition of 50 milliequivalents of potassium per day to the parenterally given fluids. The first two groups demonstrated a consistent loss of potassium in excess of that associated with nitrogen. The largest losses occurred on the first day on which fluids were given parenterally. Operative intervention increased the potassium loss in the second group on the operative and first postoperative days, but the magnitude of the losses was below that occurring on the first day of parenteral fluid therapy. The third group, which was given potassium, showed potassium losses on the first day of parenteral feeding and on the operative and first postoperative days but maintained a positive potassium balance for the period. Plasma potassium levels fell below normal in the second group, but not in the third except for the operative day. Postoperative plasma potassium levels were observed in a miscellaneous group of 54 surgical patients. There was wide variability, but a pronounced fall below normal occurred in most instances. Pronounced deviations in the plasma potassium level may serve as an approximation of the degree of potassium deficit. Fourteen patients with hypochloremic alkalosis responded both to oral intake of food and to the parenteral administration of potassium chloride, although the hypochloremic alkalosis is refractory to, and made worse by, sodium chloride. Hypochloremic alkalosis is probably a potassium deficiency state. The authors believe that the therapeutic and prophylactic use of potassium salts in certain surgical conditions will probably be increasingly indicated to replace or anticipate deficits which have been demonstrated to occur. The management of potassium requirements must always be integrated with an over-all program of physiologic water and electrolyte replacement.

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*Peptic Ulcer Following Splanchnicectomy: Report of 13 Cases. S. C. Mason and H. M. Pollard.—p. 271.
*Significance of Ulcerating Lesion in Stomach Following Gastroenterostomy. H. K. Gray and K. A. Lofgren.—p. 285.
Analysis of Postoperative Cholangiograms. J. A. Sterling, P. S. Friedman, V. P. Ravel and L. Solis-Cohen.—p. 292.
Changes in Renal Function Following Ureteral Transplantation. H. R. Sauer, M. S. Blick and K. W. Buchwald.—p. 299.
Behavior of Bone Grafts. T. Horwitz.—p. 310.
Medical Treatment of Endometriosis and Significance of Endometriosis. J. V. Meigs.—p. 317.
Surgical Procedures Involved in Treatment of Endometriosis. V. S. Counseller.—p. 322.
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Suction Socket for Above-Knee Amputees. P. E. McMaster and R. Mazet Jr.—p. 335.
Effect of Moderate Degrees of Dicumarol-Induced Hypoprothrombinemia on Experimental Intravascular Thrombosis. J. F. Rogers, R. J. Barrett and C. R. Lam.—p. 339.
Papilloma of Lacteal Duct. A. C. Estes and C. Phillips.—p. 345.
Carcinoma of Thyroid Gland. W. H. Cole, D. P. Slaughter and J. D. Majarakis.—p. 349.
*Preoperative Evaluation of Liver Function in Patients with Cirrhosis of Liver. A. H. Blakemore.—p. 357.
Effect of Reduced Blood Flow to Liver in Renal Hypertension. L. Davis, C. Tanturi and J. Tarkington.—p. 360.

Peptic Ulcer After Splanchnicectomy.—In a group of 1,498 patients who underwent splanchnicectomy for hypertension, Mason and Pollard found 13 cases of peptic ulcer after the operation. Three patients had proved ulcers preoperatively; in 4 a presumptive diagnosis of ulcer was made, and in 3 others the symptoms were suggestive of peptic ulcer. An ulcer was demonstrated postoperatively in 9 patients, and a presumptive diagnosis was made in 3 others. In 1 instance there were only suggestive symptoms of peptic ulcer both before and after operation, and it was not known whether the scarring of the duodenum seen six years postoperatively had been present before splanchnicectomy. Only 4 patients had preoperative complication of their ulcers, such as hemorrhage, which was usually of no great severity. By contrast, 11 of the 12 with ulcers which appeared after splanchnicectomy had complications, and it was frequently only by the complication that the ulcer announced its presence. Five of these patients had severe complications; 2 died and the other 3 required emergency laparotomy. It seems clear that, after splanchnicectomy, severe complications of peptic ulcer developed because the normal epigastric sensations of pain were either abolished or greatly reduced, so that the ulcers were permitted to advance to dangerous proportions without giving the usual warning. Epigastric pain was present immediately after splanchnicectomy in 2 patients, and in both of these severe complications developed. Vague epigastric distress months to years postoperatively was noted by 5 of the 8 patients with abdominal symptoms. More attention should be paid to vague abdominal signs after splanchnicectomy. Prompt diagnosis and rigid medical management in these cases would reduce the frequency of complication when peptic ulcer is present.

Significance of Ulcerating Lesion in the Stomach After Gastroenterostomy.—Gray and Lofgren reviewed data on 825 patients in whom a previously established gastroenteric stoma for duodenal or gastric ulcer had to be discontinued, owing to subsequent complications, and for whom a partial gastrectomy was carried out as a secondary procedure. Lesions of the stomach which developed after gastroenterostomy were malignant in 18 of 53 patients. Of the 53 gastroenteric stomas, 41 had been made because of duodenal ulcer, 11 for gastric ulcer and 1 for other reasons. Eleven of the 41 patients who had gastroenterostomy for duodenal ulcer developed malignant lesions of the stomach, as demonstrated at operation. Six of the 11 patients who had had a gastroenteric stoma made for gastric ulcer were found to have malignant lesions of the stomach which either had gone unrecognized at the time of gastroenterostomy or had developed later. After gastroenterostomy the roentgenographic examination of a lesion in the stomach is difficult owing to the great structural changes, inflammatory conditions and obstructive features that are so often encountered. An accurate roentgenographic diagnosis is almost impossible when the new lesion has developed in the portion of the stomach distal to the old gastroenteric stoma. In view of the high incidence of malignancy in the lesions that develop in the stomach after gastroenterostomy, it is extremely important to rule out carcinoma before instituting conservative management.

Preoperative Evaluation of Liver Function.—An analysis of 44 cases of disease of the liver (42 of cirrhosis) in which portacaval anastomosis was performed provided Blakemore with the opportunity of correlating the preoperative evaluation of the status of the liver with its postoperative behavior. In some patients the postoperative course was better than would have been anticipated on the basis of several preoperative liver tests. To obtain an over-all perspective of the relative values of the different liver tests the author selected 7 patients whose postoperative course was punctuated by evidence of further depression of hepatic function even though they had survived the portacaval shunt procedure. Ascites appeared postoperatively in all 7 cases. It was apparent that no single liver test afforded adequate information on which to predict the behavior of the liver after operation. For example, the cephalin flocculation reaction was strongly positive in 4 of the 7 cases and totally negative in 3. The author is inclined to believe that the type of cirrhosis was a factor in this discrepancy. The 3 patients with negative flocculation tests had Laennec's cirrhosis, whereas 3 of the 4 patients with strongly positive cephalin flocculation reactions had cirrhosis of the posthepatitis variety. The most consistent observation in the 7 selected patients is the inability of the liver to excrete sulfobromophthalein sodium and to make albumin. The author concludes that patients with cirrhosis who have serum albumin levels of 3 per cent or under with sulfobromophthalein sodium retention in excess of 35 per cent one half hour after injection are in general not good operative risks. However, study of individual cases will reveal a wide margin of risk even in this group, particularly in posthepatitis patients. Many of these patients can be brought through a shunt procedure safely if care is exercised in the selection of the time to operate, the preoperative preparation and the postoperative management.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

61:269-314 (Aug.-Sept.) 1949

Fibrous Changes in Dermis, with Special Reference to Senile Elastosis. G. H. Perceval, P. W. Hannay and D. A. Duthie.—p. 269.
Liver Function in Darier's Disease and Pityriasis Rubra Pilaris. A. Porter and S. R. Brunauer.—p. 277.
Achievement of Robert Willan. G. H. Findlay.—p. 281.
Mepacrine Drug Eruption Affecting Teeth. G. A. G. Peterkin.—p. 287.

British Journal of Radiology, London

22:497-556 (Sept.) 1949

Carcinoma of Vulva: I. Treatment of Cancer of Vulva. Symposium. E. G. E. Berven.—p. 498.
Id.: II. Radium Implantation Treatment of Carcinoma of Vulva. M. C. Tod.—p. 508.
Id.: III. Cancer of Vulva Treated by Radiation: Analysis 127 Cases. F. Ellis.—p. 513.
Influence of Energy Absorption and Electron Range on Dosage in Irradiated Bone. F. W. Spiers.—p. 521.
Radiological Diagnosis of Lipoma of Corpus Callosum. D. Sutton. —p. 534.
De-Ossification in Lumbar Transverse Process. R. A. Roberts.—p. 540.
Jejuno-Gastric Intussusception. D. M. Coates.—p. 544.
*Haemosiderosis and Dust Reticulation of Coal-Miners (Interesting Case Report). A. Meiklejohn.—p. 547.

Hemosiderosis and Dust Reticulation of Coal Miners.—Meiklejohn says that the similarity of the radiographic appearances of hemosiderosis in certain cases of mitral stenosis and the dust reticulation of coal miners is now well recognized. The differential diagnosis should seldom cause difficulty, if clinical and radiographic findings are considered in relation to the precise details of the occupational history. It should not be overlooked that the two conditions may coexist, although the combination must be rare by reason of the seriousness of the heart lesion, the physical strain of work and the long period of exposure required for the development of pneumoconiosis. The author reports a miner with rheumatic carditis and mitral stenosis whose heart condition was associated with hemosiderosis and pneumoconiosis of the silicotic and dust reticulation types. Postmortem examination corroborated the coexistence of the conditions.

British Medical Journal, London

2:497-552 (Sept. 3) 1949

Reform in Medical Education. W. M. Arnott.—p. 497.
Teaching of Physiology. G. W. Pickering.—p. 502.
Teaching of Chemistry. E. C. Dodds.—p. 505.
Teaching of Biology as Preparation for Medicine. F. A. E. Crew. p. 508.
Teaching Anatomy to Medical Students. T. P. McMurray.—p. 510.
Teaching Physics to Medical Students. D. W. Smithells.—p. 512.
Training of Teacher. W. R. Niblett.—p. 526.

2:553-610 (Sept. 10) 1949

Centenary of Pavlov's Birth. E. D. Adrian.—p. 553.
*Myxoedematous Madness. R. Asher.—p. 555.
*Optimal Methods in Treatment of Opthalmia Neonatorum. A. Sorsby and I. Kane.—p. 562.
Bacteriophage Types in Penicillin-Resistant Staphylococcal Infection. M. Barber and J. E. M. Whitehead.—p. 565.
Infection with Penicillin-Resistant Staphylococci in Hospital and General Practice. G. B. Forbes.—p. 569.
Homologous Serum Jaundice. D. Lehane, C. M. S. Kwantes, M. G. Upward and D. R. Thomson.—p. 572.
Iso-Immunization by Blood-Group Factors A and B in Man. P. O. Hubinont.—p. 574.
Diagnosis and Treatment of Cutaneous Anthrax. J. A. Holgate and R. A. Holman.—p. 575.
Acute Pericarditis Simulating Cardiac Infarction. W. A. Bourne. —p. 579.

Myxoedematous Madness.—According to Asher myxedema is one of the most important, one of the least known and one of the most frequently missed causes of organic psychoses. It is important because it often responds to treatment. He describes 14 patients, all of whom presented myxedema and psychotic changes. They all showed a psychosis amounting to complete insanity, 10 having been admitted to the mental observation wards under the Lunacy Act, 1 referred to the neurosurgeon for cerebral tumor and 3 to general medical wards with other diagnoses. There was a dramatic and complete recovery of sanity with thyroid treatment in 9 of the cases, a partial improvement to 2, no change in 1, and fatalities in 2. The fact that in none of these cases had the diagnosis been made by the outside physician suggests that there is need for increased awareness of myxedema as a cause of psychosis. It is not a specific psychosis, but paranoid ideas are common. If one observer can detect 14 cases in four years, there must be many others. There may be many unrecognized cases in mental hospitals. If the diagnosis is borne in mind by psychiatrists, a number of otherwise hopeless psychoses may be cured and the awareness of an organic cause for one psychosis may lead to the discovery of physical causes for others, which are at present dismissed as of psychologic or idiopathic origin.

Optimal Methods in Ophthalmia Neonatorum.—Sorsby and Kane review a series of 151 patients with ophthalmia neonatorum, who were treated by different methods. Oral administration of 200,000 units of penicillin, either exclusively or after an initial intramuscular injection of the agent, proved disappointing. Combined oral sulfonamide and local penicillin therapy proved effective in reducing the duration of treatment but ineffective in reducing the frequency of relapses after either sulfonamide or penicillin therapy. Duration of treatment was likewise reduced by increasing the dose of the sulfonamide compound. With sulfamethazine, 0.5 Gm. initially and a maintenance dose of 0.25 Gm. every six hours, some 70 per cent of cases showed clinical cure within one to three days. Similar results were obtained with sulfamerazine, 0.5 Gm. initially and 0.25 Gm. at intervals of eight hours. The use of these larger doses of sulfonamide drugs does not apparently influence the relapse rate; however, it is possible that sulfamerazine may prove to be a favorable exception. For the present the best way of administering penicillin is still the instillation of drops of 10,000 units per cubic centimeter initially at intervals of a minute for half an hour and subsequently at less frequent intervals. For the best results with sulfonamide therapy higher doses than those used previously are necessary.

2:611-662 (Sept. 17) 1949

*Results of Thymectomy in Myasthenia Gravis. G. Keynes.—p. 611.
*Incidence of Cross-Infection in Children's Wards. A. G. Watkins and E. Lewis-Faning.—p. 616.
Effect of Tetraethylammonium Bromide on Gastric Secretion and Motility. I. R. MacDonald and A. N. Smith.—p. 620.
Nitrogen Mustard Therapy with Special Reference to Hodgkin's Disease. J. D. N. Nabarro.—p. 622.
Treatment of Ringworm of Scalp. H. Haber, R. T. Brain and J. W. Hadgraft.—p. 626.
Aspirin Poisoning. I. Leveson.—p. 628.
Haematemesis as Surgical Problem. G. Buhn.—p. 630.
Iontophoresis in Treatment of Peripheral Vascular Disease. H. S. Pemberton and D. C. Watson.—p. 633.

Thymectomy in Myasthenia Gravis.—Keynes says that at his hospital 155 patients with myasthenia gravis were treated by surgical extirpation of the thymus. After deduction of 10 postoperative deaths, the 18 patients with tumors and the 7 who could not be followed up, there remain 120 patients, whose cases form the basis of this review. The author classifies these patients into four groups. At the time of writing, those of the first group were well and free from symptoms and did not require neostigmine. Patients in the second group were practically well, but had slight symptoms and were given small doses of neostigmine. The patients in group 3 had some (often considerable) improvement, but treatment with neostigmine was still necessary. The fourth group showed no improvement after thymectomy. Of the 120 patients who did not have thymic tumors and survived the operation, 79, or about two thirds, showed complete or almost complete remission of symptoms. These could not be accounted for as spontaneous remissions. The results are influenced by the duration of the disease before operation: the shorter the history, the better the results. Early operation is indicated by the above fact and by the 11.6 per cent incidence of tumors, the development of which should, if possible, be anticipated. The connection between myasthenia and an abnormal thymus is now well established, but there is no clue to how or why the gland acquires abnormal function. The chemistry of the secretion which is producing myasthenia is still unknown. Surgery may help to provide an answer to some of these questions. Surgery, with the help of neostigmine, has made a practical advance in being able to alleviate the condition of many of the sufferers from myasthenia gravis.

Cross Infection in Children's Wards.—According to Watkins and Lewis-Faning the British Pediatric Association began in 1945 to interest itself in the problem of cross infection in children's wards in hospitals. The term cross infection was applied to any infection acquired by a patient in the hospital environment. Clinically it is an infection arising during the course of another illness, for which the patient was originally hospitalized, and may attack the respiratory tract, gastrointestinal tract, wound, skin or mucous membrane or be manifested as one of the specific fevers. Fourteen hospitals were selected as representing a cross section of children's wards in which patients were under the clinical charge of an experienced pediatrician. Children's wards in a general hospital, wards in hospitals for children only, wards in teaching and nonteaching hospitals and wards taking long-stay cases were included. In all, the records of 26 different wards were utilized. The over-all incidence of cross infection in 9,619 admissions was 7.1 per cent. The average age length of increased hospital stay of the patients that developed a cross infection was twelve days. Death was attributable in 41 children partly or wholly to cross infection. An index for the rate of cross infection was calculated for each ward (standard cross infection ratio) and was found to vary widely for the different wards even within the same hospital. Attempts were made to correlate factors which might be related to the variations, which included ward architecture, equipment, nursing, staffing, visitors, type of case admitted and the age of the children. The only significant finding was that cross infection was commoner in wards which admitted infants.

Lancet, London

2:447-494 (Sept. 10) 1949

Dysmenorrhea. A. J. Wrigley.—p. 447.
Mercury Poisoning from Fingerprint Photography: Occupational Hazard of Policemen. J. N. Agate and M. Buchell.—p. 451.
Vitamin B_{12} by Mouth in Pernicious and Nutritional Macrocytic Anaemia and Sprue. T. D. Spies, R. E. Stone, G. Garcia Lopez and others.—p. 454.
*Urinary Excretion of Radioactive Iodine as Diagnostic Aid in Thyroid Disorders. A. S. Mason and R. Oliver.—p. 456.
*Urinary Excretion of Radioactive Iodine as Diagnostic Test in Thyroid Disease. D. G. Arnott, E. W. Emery, R. Fraser and Q. J. G. Hobson.—p. 460.
Transorbital Leucotomy: Some Results and Observations. J. Walsh.—p. 465.
Perforation of Intestine by Fish-Bone. E. H. Travers.—p. 466.

2:495-542 (Sept. 17) 1949

Seeing Patient Through: Failure of Medical Coördination. J. M. Lipscomb.—p. 495.
Tensile Strength of Sutures: I. B.P.C. Method of Test. D. M. Douglas.—p. 497.
Id: II. Loss when Implanted in Living Tissue. D. M. Douglas.—p. 499.
Incidence of Penicillin-Resistant and Streptomycin-Resistant Staphylococci in Hospital. P. M. Rountree and E. F. Thomson.—p. 501.
Flaxedil as Curarising Agent in Anaesthesia. H. B. Wilson and H. E. Gordon.—p. 504.
Hyaluronidase in Paediatric Therapy. W. Gaisford and D. G. Evans.—p. 505.
Effect of Carbamazide on Excretion of p-Aminosalicylic Acid. N. W. Horne and W. M. Wilson.—p. 507.
Effect of Noradrenaline on Human Circulation. H. J. C. Swan.—p. 508.
Facial Palsy and Poliomyelitis. T. Stapleton.—p. 510.
Curare with General Anaesthesia for Forceps Delivery. J. D. Bourke.—p. 511.
Strangulated Mesenteric Hernia of Caecum. J. F. H. Bulman.—p. 512.
Senile Haematocelpos. N. Alders.—p. 513.
Acute Arterial Spasm Complicating Accidental Haemorrhage in Late Pregnancy. J. J. Handler.—p. 514.

Urinary Excretion of Radioactive Iodine in Thyroid Disorders.—Mason and Oliver investigated urinary excretion of radioactive iodine as a routine diagnostic test for thyroid disease. Direct estimation of thyroid uptake, in conjunction with estimations of blood iodine, gives a more exact picture of the thyroid function than do urinary values, but for routine use a method must be simple and involve no risk to the patient. Radioactivity in urine can be determined accurately with low doses of tracer iodine. The method involves less apparatus and laboratory space than does direct thyroid counting and avoids any disturbance of the patient. A standard dose of about 10 microcuries of I^{131} was adopted. This was found to give a urinary excretion suitable for measurement in all cases of thyrotoxicosis; in persons with normal or diminished thyroid function the dose can be reduced to 5 microcuries. The authors conclude that the estimation of urinary excretion of radioactive iodine administered by mouth is a valuable diagnostic aid in thyroid disease. The method can be made simple and safe enough to justify its use as a routine procedure. Measurement of excretion in bulked urine samples collected between the sixth and twenty-fourth hour after administration of the dose provides a reliable diagnostic test for thyrotoxicosis. In the present series a six to twenty-four hour excretion of less than 4 per cent indicated definite thyroid overactivity, excretion of 10 to 25 per cent occurred in normal persons, and a rate over 25 per cent was typical of myxedema.

Urinary Excretion of Radioactive Iodine in Thyroid Disease.—Arnott and co-workers report studies on the urinary excretion of I^{131} by 30 normal persons, 26 patients with thyrotoxicosis and 3 patients with hypothyroidism. The urinary excretion was followed for forty-eight hours after the administration by mouth of a tracer dose of 10 microcuries of I^{131} with 10 micrograms of potassium iodide. Repeated tests on 4 persons have shown close agreement. Comparison of the three main groups of normal, thyrotoxic and hypothyroid persons has confirmed previous observations that the rate of fall of urinary excretion of I^{131} gives an indirect index of thyroid activity. A simple and sensitive differentiation can be made between these three groups by measuring the urinary excretion in the four periods 0 to 8, 8 to 12, 12 to 24 and 24 to 48 hours. Thyrotoxicosis is best characterized by low values in the 8 to 12 hour period, and hypothyroidism by high values in the 24 to 48 hour period. Further experience with this test is required, particularly in cases of mild thyrotoxicosis and hypothyroidism, and of renal and circulatory disease.

Medical Journal of Australia, Sydney

2:189-224 (Aug. 6) 1949

Prothrombin Test in Clinical Medicine. E. R. Trethewie and P. A. Melvin.—p. 189.
Streptomycin in Tuberculosis. J. B. Ferguson, V. G. Bristow and P. R. Bull.—p. 192.
Industrial Dermatitis. E. Rosanove.—p. 194.
The Nature, Recognition and Treatment of Glaucoma. A. D'Ombrain.—p. 196.
Brief Review of Industrial Dermatoses in Western Australia. J. M. O'Donnell.—p. 200.
Non-Ezematous Industrial Dermatitis. J. Summons.—p. 202.
Recent Experiences in London on Use of Physical Medicine in Arthritis. J. A. Shanasy.—p. 203.
Streptomycin in Pulmonary Tuberculosis: Review of 6 Cases. R. M. Ford.—p. 205.
Royal Prince Alfred Hospital Cancer of the Uterus Follow-Up. H. H. Schlink, C. L. Chapman and F. N. Chenhall.—p. 206.

Quarterly Journal of Medicine, Oxford

18:173-274 (July) 1949

*Chronic Agranulocytosis. E. B. Adams and L. J. Witts.—p. 173.
Ankylosing Spondylitis: Radiological, Clinical and Biochemical Investigations in Series of Cases. R. Mowbray, A. L. Latner and J. H. Middlemiss.—p. 187.
Retinal Vessels in Hypertension. A. Leatham.—p. 203.
Ankylosing Spondylitis. F. D. Hart, K. C. Robinson, F. M. Allchin and N. F. Maclagan.—p. 217.
Carbohydrate Metabolism and Gastric Secretory Activity. A. Muir.—p. 235.
Circulatory Dynamics in Emphysema. A. D. Gillanders.—p. 263.

Chronic Agranulocytosis.—Adams and Witts report on 5 patients with chronic agranulocytosis. Neutropenia was apparently the primary condition. The only constant features were leukopenia and agranulocytic infection. The patients had been exposed to factors such as hair dye, sulfonamide compounds, lead, benzyl benzoate and mumps, which might possibly have damaged the bone marrow before the diagnosis of agranulocytosis was made. The course of the disease was characterized by attacks of severe infection from relatively trivial causes. The infections included inflammation of the lips, gums, mouth and throat, severe reactions to dental extraction, otitis media, septic fingers and cutaneous sepsis, suppurative lymphadenitis, urinary infection, septicemia and unexplained fever. One patient had slowly progressive pulmonary tuberculosis. Intervals between attacks ranged from a few days or weeks to six years. Between the attacks the patients were fairly well, though they lacked

vitality. One patient died from pyemia, cerebral abscess, acute bacterial endocarditis and chronic pulmonary abscess. The duration of the known granulocytopenia in this case was twenty-two months. The average duration of the disease in the 4 survivors is now more than five years, and there is no evidence of progressive deterioration. The only remedy of proved efficacy for the control of the acute attacks was penicillin. It was given intramuscularly in a dosage of 60,000 units every three hours. When attacks of infection were occurring frequently, a prophylactic dose of 100,000 units was given twice daily. Splenectomy was advised in 1 patient with frequent attacks of infection whose bone marrow appeared cellular. The operation was performed without difficulty, but there was little leukocytosis and the marrow became more aplastic. One year after the operation there was little change from the preoperative state other than a slight lymphocytosis. The cases reported are differentiated from recurrent agranulocytosis and from splenopathic leukopenia. They form another distinct group in that infections were chronic and persistent and there was no evidence of overactivity of the spleen. They are variants of chronic aplastic anemia, in which the main impact of the disease is on the white cells. The prognosis appears to be relatively good, particularly with control of attacks of infection by penicillin.

Transactions Royal Soc. Trop. Med and Hyg., London

43:1-100 (July) 1949. **Partial Index**

*Blood Examination and Prognosis in Acute Falciparum Malaria. J. W. Field.—p. 33.
In Vitro Effects of Chloromycetin on Malayan Bacteria. R. Green and D. S. Mankikar.—p. 57.
Some Peculiar Cases of Gangrene and Their Possible Relationship to Tropical Phlebitis. M. Gelfand.—p. 75.
Clinical and Biochemical Studies in Cholera and Rationale of Treatment. M. H. Ghanem and M. N. Mikhail.—p. 81.

Prognosis in Acute Falciparum Malaria.—Field reports observations made by the Malaria Division of the Institute for Medical Research in Malaya, which clearly indicate the superiority of blood examination, particularly of parasite counts, over clinical judgment in most cases of falciparum malaria, not only for diagnosis but also as a guide to the chances of recovery. There were 50 deaths in a series of 2,316 cases of acute uncomplicated falciparum malaria. Parasites in blood films were counted daily during treatment in all cases. Analysis of this material shows a close relation between the death rate and the peripheral concentration of parasites at the time the treatment began. High counts carried a high risk and low counts a low one. Thirty-nine of the 50 deaths were of patients whose peripheral blood before treatment showed at least 100,000 parasites per cubic millimeter. Three fatal cases had peripheral counts of less than 10,000 per cubic millimeter.

Acta Cardiologica, Brussels

4:309-424 (No. 4) 1949. **Partial Index**

*Systolic Gallop Rhythm. A. A. Luisada and M. M. Alimurung.—p. 309.
Oximetric Studies in Congenital Cardiopathies. C. Callebaut, H. Denolin and J. Lequime.—p. 324.
*Clinical and Radiologic Course of Syndrome of Dilated Pulmonary Artery and Small Aorta with Probable Interauricular Communication. V. Puddu.—p. 335.
*Dextrocardia with Cor Triloculare. L. Jonnart, J. Meyer and O. Van Landschoot.—p. 381.

Systolic Gallop Rhythm.—Luisada and Alimurung report on 12 male and 12 female patients with systolic gallop rhythm. The particular type of abnormal cardiac rhythm was produced by a third sound during ventricular systole. This additional sound was detected and interpreted by auscultation in 8 patients, undetected in another 8 patients and detected but erroneously interpreted in the remaining 8 patients. These facts demonstrate the importance of an accurate phonocardiographic study, which disclosed the third sound in all 24 patients. It is difficult to determine a cause and effect relationship between the abnormal rhythm and the symptoms of the patients. No single symptom was consistently present in all patients. Many complained of sudden, stabbing precordial pain, others of palpitation or irregular heart action. These symptoms were elicited in some of the patients by strenuous exertion, deep respiration, repeated coughing or even by sudden movement of the arms. Except for 1 patient who later died from acute coronary occlusion, all of the patients are living and well. Two types of systolic gallop rhythm may be distinguished, the basal and the apical, or midprecordial. The basal type is early systolic and is associated with functional disturbances or anatomic changes of the aorta or the pulmonary artery. The apical type is midsystolic or late systolic and, at least in a certain number of cases, is caused by traction of pericardial adhesions. The phonocardiograms showed an average frequency of 100 vibrations per second. In the majority of cases the amplitude of the third sound was at least one half of one or both of the first two heart sounds, while it was greater than that of either heart sound in a few instances. In 1 case there were two additional sounds during systole. The phonocardiographic characteristics may be an aid in avoiding misinterpretation of the third sound.

Syndrome of Dilated Pulmonary Artery and Small Aorta.—Puddu reports 2 girls and 1 boy with a congenital syndrome of the heart followed from the ages of 14 to 23 and 15 to 21, respectively. The anatomic diagnosis remained uncertain, but the syndrome presented by the 3 patients belongs to a group in which three anatomic elements may be associated or may occur separately, namely, interauricular communication, dilated pulmonary artery and small aorta. Diagnosis cannot be established during life without catheterization of the chambers of the heart. The clinical course in the author's cases was uniform and favorable. Prognosis is good in the majority of such cases. The electrocardiographic tracings showed a partial defect of conduction along the right branch of the bundle of His. The clinical, roentgenologic and electrocardiographic aspects of the condition remained unchanged during the years of follow-up.

Dextrocardia with Cor Triloculare.—Jonnart and coworkers report 1 case of dextrocardia with cor triloculare in a boy aged 10 years, with pronounced cyanosis and hippocratic fingers and toes. The electrocardiogram revealed a pronounced preponderance of the right side and a Wolff-Parkinson-White syndrome. Isolated dextrocardia in the absence of transposition of abdominal viscera was demonstrated on roentgenographic examination. Oxygen saturation of the blood in the vena cava superior was determined to be 66.5 per cent as compared with 77 per cent in the right auricle and 98 per cent in the pulmonary veins, thus indicating a 50 per cent mixture of venous blood with arterial blood at the level of the right auricle. A large interauricular communication seemed to be the only satisfactory explanation. The similarity of pressure and of oxygenation of the blood in the ventricle and in the radial artery, the same circulatory output in the greater and lesser circulation suggested a single ventricle. An interauricular septal defect and a single ventricle were the malformations demonstrated by catheterization of the chambers of the heart.

Acta Medica Scandinavica, Stockholm

134:235-310 (Aug. 30) 1949. **Partial Index**

Megalocytic Anemia in Infants. G. Edgren and E. Segerdahl.—p. 235.
*On the Risk of Urolith Formation in Treatment with Sulfonamide Drugs. S. Helander.—p. 244.
Changed Agglomeration Tendency as Manifestation of Diseases of Erythrocytes. F. Mlcoch, C. Wunderly and F. Wuhrmann.—p. 260.

Urolith Formation from Sulfonamide Compounds.—Helander produced urolithiasis in rabbits by intraperitoneal injections of sulfathiazole, sulfadiazine, sulfamerazine, a combination of the sodium salts of these three sulfonamide compounds (sulfadital) and sulfamethazine. The Altmann freezing-drying method has been employed for retaining the concretions in situ. The calculi in the kidneys of the animals were ascertained and identified by fluorescence microscopy, polarization microscopy and melting point determinations of the crystals in situ. The risk of urolithiasis was greatest with sufathiazole, followed by sulfadiazine and sulfamerazine, while sulfamethazine involved the smallest risk. Whether the urinary calculi are made up of free sulfonamides or of their acetyl derivatives depends on the

solubility of the respective substances and their blood concentrations. Sulfadital involves a much smaller risk of formation of calculi than the single compounds. This is attributed to the fact that the various drugs do not affect each other's solubility. The latter corresponds only to the individual concentration, while the therapeutic effect corresponds to the sum of the component concentrations. Two factors favor the employment of sulfadital: (1) The risk of urolithiasis is reduced to a minimum and (2) considerably larger doses can be administered in resistant infections without involving a greater risk than that associated with the use of the single compounds.

Archivos Argentinos de Pediatría, Buenos Aires

22:3-60 (July) 1949. **Partial Index**

*Meningeal Form of Primary Acidosis in Infants. C. Torres Umaña. —p. 34.

*Circulatory Apparatus in Brucellosis in Children. A. S. Segura. —p. 39.

Meningeal Form of Acidosis in Infants.—Torres Umaña observed in the past thirty years several instances of an acute infection in infants with primary acidosis. The acuteness of the illness probably depends on a disorder of the insulin metabolism as the result of hepatopancreatic insufficiency aggravated by altitude. The patients were observed in Bogotá, Columbia. The disease presents symptoms of acute infection, acidosis, uncontrollable vomiting, fever, diarrhea with a large quantity of starch, progressive hepatopancreatic insufficiency and progressive nervous depression. The blood and urine contain ketones, and there is leukocytosis. Large amounts of acetone and diacetic acid and dextrose are present in the urine all through the disease, which lasts four to six days. Early administration of insulin alternating with infusion of normal dextrose solution gives satisfactory results, the ketones disappearing from blood and urine. The mortality rate is 70 per cent. The meningeal form of acidosis is rare. The author reports a case, the second published in the literature, with symptoms of primary meningeal acidosis. Acetonuria and diacetic acid in the urine appeared early and in large amounts. The cerebrospinal fluid of the patient contained a large amount of acetone and diacetic acid. Disappearance of acetone from the urine on the fourth day of the disease coincided with increase of diacetic acid in the urine and aggravation of the symptoms of infection.

Cardiovascular Brucellosis in Children.—Segura carried on observations on the cardiovascular system in 77 children of both sexes with brucellosis. One patient had what appeared to be Brucella endocarditis, 2 had electrocardiographic changes showing myocardial lesion, and 2 had cardiovascular anomalies of uncertain causation. Relative tachycardia not related to arterial pressure was observed in 29 patients and bradycardia in 1. The systolic pressure was diminished in 15 children and the diastolic was increased in 13. Cardiac brucellosis is rare. Certain clinical symptoms and roentgenologic and electrocardiographic changes show functional circulatory changes caused by infection.

Harefuah, Jerusalem-Tel Aviv

37:37-50 (Aug. 15) 1949

*Queensland Fever in Israel. G. Rosenkranz.—p. 41.

Isolation of Causative Agent of Q Fever, C. Burneti, in Israel. A. Komarov and L. Goldsmit.—p. 43.

Mass Examinations and Mass Treatment of Jewish D.P.'s in Austria, During 1948. P. Robinson.—p. 46.

Queensland Fever in Israel.—Rosenkranz reports an epidemic form of atypical primary pneumonia in 220 patients, 20 of whom were admitted to the Mount Carmel Hospital in Haifa. Q fever was suspected on account of the increasing number of reports of this disease in the Mediterranean area. Complement fixation tests with antigen of Coxiella burneti revealed titers ranging from 1:32 to 1:2,054 in 40 cases. There was a sudden onset with a high temperature in the absence of any prodromal symptoms, chills on the second day, general malaise and frontal headache. Cough did not appear before the second or third day in most cases, with little sputum or no sputum at all. There were occasional complaints of pain in the chest. Examination revealed symptoms of pneumonia in some cases, but roentgenologic examination revealed involvement of lungs in all but 2 cases. The lower lobes were affected as a rule; the upper lobes were affected in 2 instances. The infiltration was more or less homogeneous, sometimes in the form of involvement of an entire lobe. Segmental atelectasis was observed in only 2 cases. The infiltrations seemed to be predominantly exudative. Examination of the blood revealed relative leukopenia, some shift to the left, monocytosis, aneosinophilia and increased sedimentation rate. Pathogenic bacteria could not be demonstrated in the sputum. The average duration of fever was ten to twelve days. Bradycardia occurred in most of the patients. There was not a single fatal case, but 1 patient died from cerebral hemorrhage within one week after his temperature had been restored to normal. In general the prognosis is favorable. Q fever cannot be differentiated from other atypical pneumonias but by the complement fixation test with Coxiella burneti as antigen. The result of this test becomes positive only in the course of the second week.

Medicina Clinica, Madrid

12:363-408 (June) 1949. **Partial Index**

*Nitrogen Mustard Therapy. J. Pedro-Botet.—p. 363.

Nitrogen Mustard Therapy.—Pedro-Botet administered nitrogen mustards to 9 patients with the following diseases: Hodgkin's lymphosarcoma, leukosarcomatosis in the preleukemic period and tuberculous adenitis. Methyl-bis (beta-chloroethyl) amine hydrochloride or tris (beta-chloroethyl) amine hydrochloride was given in daily doses of 10 mg. for three or four consecutive days. The drug was dissolved in 20 or 30 cc. of normal sodium chloride solution and the solution given intravenously at a slow rate (six to ten minutes). Hodgkin's disease was present in 4 patients two months to two and one-half years. Two of the patients were given one or two series of roentgen therapy. In all 4 patients nitrogen mustard treatment caused a rapid but transient improvement. Remissions in these patients were of longer duration after roentgen therapy than after the nitrogen mustard treatment. The treatment failed in 3 patients with lymphosarcoma, in 1 patient with tuberculous cervical adenitis and in 1 patient with leukosarcomatosis. Toxic effect of the drug on the hematopoietic tissues was observed in all cases. These varied from leukopenia to agranulocytosis or panmyelophthisis. The treatment is of value in the early phase of the aforementioned disease when there is no response to tonic hematopoietic treatment and roentgen therapy, as a complemental treatment to roentgen therapy and in roentgen-resistant forms of the diseases.

Medizinische Klinik, Munich

44:1205-1236 (Sept. 23) 1949. **Partial Index**

Diabetes and Dystrophy. G. Katsch.—p. 1205.

*Diphenylhydantoin Sodium in Treatment of Epilepsy. F. A. Kehrer. —p. 1211.

Considerations on Pathogenesis of Transfusion Reactions Due to Rh Factor. P. Dahr.—p. 1212.

Observations in Febrile States During Convalescence from Typhus; Description of Peculiar Secondary Fever in a Convalescent from Typhus. E. H. Maier.—p. 1215.

Ferrous Ascorbic Acid in Treatment of Hypochromic Anemias Following Genital Hemorrhage. H. Küsters.—p. 1218.

Diphenylhydantoin Sodium in Epilepsy.—Kehrer treated patients with idopathic or residual epilepsy with diphenylhydantoin sodium derivatives. Two preparations, comital (0.05 Gm. diphenylhydantoin sodium plus 0.1 Gm. n-methyl-ethyl phenyl barbituric acid [mephobarbital]) and comital L (0.05 Gm. diphenylhydantoin sodium plus 0.05 Gm. n-methyl-ethyl phenyl barbituric acid[mephobarbital] plus 0.05 Gm. phenobarbital sodium) were employed. One-half to one tablet was administered three times daily. The number of the attacks was reduced in nearly all patients, or the attacks became less severe. The drugs could be used for ambulatory treatment because of the complete absence of untoward reactions, such as headache, vertigo, vomiting, tremor or ataxia. Only 1 patient complained of anorexia and dysphagia, which may occur in epileptics in the absence of any treatment. Many patients remained free from attacks for several months as long as they were taking the drug in the prescribed dosage, but attacks recurred when the drug

was discontinued or a substitute preparation used. The highly satisfactory results obtained with comital are due to the union of diphenylhydantoin sodium with mephobarbital.

Nordisk Medicin, Stockholm

42:1355-1386 (Aug. 19) 1949. Partial Index

Pulmonary Insufficiency in Collapse Treatment of Pulmonary Tuberculosis. G. Birath.—p. 1355.
Peptic Esophagitis. Esophageal Peptic Ulcer. P. Berdal.—p. 1360.
*Electrocardiogram in Hypercalcemia. O. Ljung.—p. 1364.
Unilateral Renal Tuberculosis. Lesion of Iliac Vein in Difficult Nephrectomy. Bacillemia. Recovery on Treatment with Streptomycin. A. Steinbeck.—p. 1375.
Rupture of Uterus During Delivery in Case with Hemangioma of Uterus. S. Englund and E. Odeblad.—p. 1376.
Complications in Myelography with Contrast Medium. S. Lindgren and S. Ribbing.—p. 1378.

Electrocardiogram in Hypercalcemia.—Ljung says that observations on the electrocardiogram in hypercalcemia are too few to allow definite conclusions. Prolonged conduction time has been established in some cases, as in his case of hypercalcemia due to parathyroidism, and the Q-T interval is shortened at times, but this change is as a rule without clinical significance. The Q-T interval seems to be less affected by decided increase in the serum calcium level than by pronounced reduction in it. In his 5 cases of hypercalcemia due to vitamin D_2 therapy the T waves were broad and rounded. Although the electrocardiogram in hypercalcemia is not pathognomonic, when a short Q-T interval is observed, especially in combination with broad, rounded T waves, hypercalcemia should be borne in mind.

42:1387-1418 (Aug. 26) 1949

Pathophysiology of Joints with Special Regard to Synovitis and Its Treatment. G. Nyström.—p. 1387.
*New Serologic Reaction in Chronic Polyarthritis. N. Svartz and K. Schlossmann.—p. 1390.
Scolioses and Their Treatment. C. Hirsch.—p. 1394.
*Mortality from Pneumonia in Children After Sulfonamide and Penicillin Treatment. G. Høyding.—p. 1397.
Local Administration of Chemotherapeutic Agents in Colitis and Proctitis. E. Millbourn.—p. 1400.
*Penicillin Therapy in Acute Otitis. N. Lundgren.—p. 1401.
Solitary Non-Parasitic Hepatic Cysts. O. Knutrud.—p. 1403.
New Ear Guard. U. Siirala.—p. 1406.

New Serologic Reaction in Chronic Polyarthritis.—Svartz and Schlossmann found that, although agglutinins against sheep blood corpuscles can as a rule be eliminated by absorption with unsensitized red sheep cells, the agglutinins which clump sensitized sheep cells in serums from patients with chronic polyarthritis cannot be absorbed by normal, or unsensitized, sheep cells. This absorption test seems to be specific for chronic polyarthritis. All rabbit and swine serums immunized with enterococci agglutinated sheep blood corpuscles, and pneumococci type 42 gave hemagglutination. Serum from rabbits inoculated with the strain of streptococci generally used in the Scandivanian countries for the streptococcic agglutination reaction gave no agglutination with either normal or sensitized sheep blood corpuscles in higher titer than serum from control animals; tests with other bacteria were likewise within normal limits.

Mortality from Pneumonia in Children After Sulfonamide and Penicillin Treatment.—Sulfonamide compounds, penicillin or combined penicillin-sulfonamide treatment was given in Aker Hospital during the last ten years in 198 cases of pneumonia in children aged to 11 years. There were 18 deaths (9.1 per cent), 15 among the 44 patients in the first year of life. Excluding the 14 deaths which occurred during the first twenty-four hours, the mortality rate was 2.2 per cent. Høyding saw no significant difference in the results of sulfonamide therapy and of penicillin treatment. Pneumonia in the first year of life is extremely grave in spite of all modern therapeutic measures. The importance of early effective treatment is stressed.

Penicillin in Acute Otitis.—Penicillin can and should be given, Lundgren asserts, possibly in combination with a sulfonamide preparation, even in acute otitis of several weeks' duration, as this type heals almost as quickly with penicillin therapy as do more recent types. Penicillin treatment can be applied even in mastoiditis, but in cases with roentgenologic changes combined operative and penicillin treatment is preferred. Penicillin should be given to the patient for several days after discharge from the ear has ceased to avoid recurrence of the infection. In the Ear Clinic in Lund administration of penicillin has been continued for four to seven days after cessation of the discharge, the time depending in part on the duration of the otitis, but whether this dosage is sufficient in all cases is a question. In patients with repeated recurrences the possibility of a contributory allergic cause should be considered.

Schweizerische medizinische Wochenschrift, Basel

79:793-816 (Sept. 3) 1949

*Dosage of Streptomycin and Neurotoxic Secondary Effects. K. Graf.—p. 793.
Peridural Anesthesia. C. Brunner and A. Ihlé.—p. 799.
*Degree of Utilization of Prothrombin in Hemorrhagic Diatheses. A. Baserga and P. de Nicola.—p. 801.
Studies on Aborted Human Ova: Early Malformations and Their Causes. Malformed Ova or Moles and Their Hormonal Activity. O. Kaeser.—p. 803.

Neurotoxic Secondary Effects of Streptomycin.—According to Graf the large doses of streptomycin used at first are no longer considered necessary. Lower dosage levels, therapeutically effective, avoid the secondary neurotoxic effects, particularly on the hearing apparatus. He studied the relationship between dosage levels of streptomycin and secondary neurotoxic effects on 50 adults and 20 children, who received a constant streptomycin dose by intramuscular injection for at least thirty days. By adaptation of the dose to the body weight of the patient, it was possible to avoid impairment of hearing and disturbances in the vestibular apparatus. In adults the daily dose for intramuscular administration should never be in excess of 24 mg. per kilogram of body weight, because higher doses may produce serious irreversible vestibular disturbances. A dose of 20 mg. per kilogram (divided into two injections per day), a dose exerting an adequate therapeutic effect, frequently produces vertigo but rarely irreversible disturbances. It is advisable temporarily to interrupt administration of streptomycin if vertigo develops. Secondary effects on the vestibular nerve are much less frequent when the daily dose is 16 mg. per kilogram of body weight. But even with this dosage disturbances are possible when the excretory function of the kidney is impaired. If the renal function is normal, the dose of 16 mg. per kilogram can be continued despite the occurrence of vertigo. Children are less sensitive to the neurotoxic effects of streptomycin and larger doses can therefore be given to them. Severe disturbances in hearing develop only with rather high dosage and especially with intrathecal administration. An intramuscular dose of less than 24 mg. per kilogram causes no disturbances in hearing, provided renal elimination is normal. The high and to a lesser extent the low frequencies are the ones affected in cases in which mild degrees of hardness of hearing result. In the severe degrees all frequencies are uniformly impaired. Mild forms of impaired hearing may subside, but the severe forms do not.

Prothrombin in Hemorrhagic Diathesis.—Baserga and de Nicola discuss some of the quantitative relationships of prothrombin, thrombin, fibrinogen and fibrin and call attention to factors that may throw light on obscure points in the pathology of coagulation, such as the absence of retardation in coagulation time in spite of severe thrombopenia in Werlhof's disease. The authors show that investigations on the degree of utilization of prothrombin in hemorrhagic diatheses revealed that in the presence of normal conditions of coagulation only a small quantity of prothrombin, which was not utilized during the coagulation, can be demonstrated after coagulation has taken place. In hemophilia and essential or secondary thrombopenia, however, considerable quantities of unutilized prothrombin remain in the serum. A close relationship exists between the number of thrombocytes and the degree of utilization of prothrombin: reduced utilization in the presence of low thrombocyte count and increased utilization in the presence of increased numbers of thrombocytes. The study of the degree of utilization of prothrombin in hemorrhagic diatheses provides more valuable information about the physiopathologic conditions of the first phase of coagulation than do the customary methods of examination. The authors describe the technic of the determination of the unutilized prothrombin content.

Book Notices

THE REVIEWS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES AND DO NOT REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED.

The New York Academy of Medicine: Its First Hundred Years. By Philip Van Ingen. Number VIII of the History of Medicine Series Issued Under the Auspices of the Library of the New York Academy of Medicine. Cloth. Price, $10. Pp. 373, with 46 illustrations. Columbia University Press, 2960 Broadway, New York 27; Oxford University Press, Amen House, Warwick Sq., London, E.C.4, 1949.

More than a hundred years ago, when quacks and irregular practitioners were rampant in New York City, they, in a way, were responsible for the founding of the New York Academy of Medicine. In the prologue to Dr. Van Ingen's book is an interesting account of a dinner attended by about 80 "gentlemen." The dinner and the entertainment "passed off in the greatest harmony," and, after the major part of the celebrants had retired, about 40 remained to prolong the festivities and to organize a meeting to discuss the establishment of a local medical organization having as an objective "the purification of the professional body." Thus was conceived the New York Academy of Medicine. On Jan. 6, 1847, at an organization meeting, 132 of those present signed the constitution. One of those present declined to sign, not approving of the constitution. Today the New York Academy of Medicine has more than 2,000 physicians as members, with an endowment of $4,500,000 and with its own capacious building and library. In preparing to write this book the author read 6,000 pages of minutes of stated meetings and meetings of trustees and councils. He has put together an account of the activities of the academy in its first hundred years. The various chapters are headed by the names of presidents of the academy, and in them are reviewed the principal activities carried on year by year. Among the presidents are many famous men of American medicine. The New York Academy of Medicine has been an effective force in the "purification of the professional body" and in making the community a better and more healthful place.

Failure of the Heart and Circulation. By Terence East, M.A., D.M., F.R.C.P., Physician-in-charge of Cardiological Department, King's College Hospital, London. Second edition. Cloth. Price, 2s.6d. Pp. 144. Staples Press, Ltd., Staples House, Mandeville Place, 14 Great Smith St., London W1; 70 E. 45th St., New York 17, 1948.

Much progress has been made in the knowledge of the mechanism of heart failure since the first edition of the book, and Dr. East was forced to make such an extensive revision that this edition is practically a new book. However, some material has been telescoped so much that it appears incomplete. This is particularly true of the discussions on failure of the coronary circulation and of peripheral failure, which together occupy only thirteen pages. In spite of the brevity of the book, most of the important new work is included. There is an excellent, nontechnical presentation of present concepts of congestive heart failure. Each of the symptoms and signs of heart failure is explained on the basis of physiologic mechanisms. The difficult subject of acute left ventricular failure is well handled. Cor pulmonale (right ventricular failure), however, is only superficially dealt with. The treatment of heart failure is too brief. The use of the cardiac glycosides and mercurial diuretics is certainly not up to the commonly accepted standards here in America. For instance, what modern American doctor would follow advice to use Guy's pill in the treatment of congestive heart failure? Dr. East still suggests the use of tincture of digitalis, which is a practice that was generally abandoned in the United States over twenty years ago in favor of the powdered leaf in tablet form. Since this volume is so concise, it is unfortunate that there is no bibliography so that the reader could refer to the original articles for more complete data. The author has in general done an expert job in giving a clear picture of a subject which is now so confusing, because many of our concepts that have stood the test of years have been rudely overthrown by recent experimental data. The book is easy to read and, therefore, should be of value to the busy doctor who likes to keep up with modern advances in the field of heart failure.

Die Seele ist alles: Von der Sämeeologie bis zur Heilhypnose. Von Dr. Franz Völgyesi. Deutsche Übersetzung von Franz Polonyhy. [Die ungarische Originalausgabe (4. Auflage) erschien 1941 im Verlag Dante Könyvkiadó, Budapest, unter dem Titel, "Ész den a lélek."] Cloth. Pp. 399, with 192 illustrations. Orell Füssli Verlag, Nüscheler. 22, Zurich, 1948.

"The Soul Is Everything" is the title of a book which the author identifies as "more or less of an exposition of himself" (Selbstbekenntniss). With considerable erudition he discusses the views of many philosophers and psychologists bearing on the nature of the soul or mind. The volume includes illustrations both from notable works of art bearing on psychiatric states and from present day practices in the field of hypnosis—a feature which can prove of interest to many psychiatrists.

The author maintains that what distinguishes living matter from all else is, in his terms, "the soul." In this he goes even further than Kretschmer, who stated that the soul is everything which we accomplish, comprehend, feel, represent and desire. He believes that through the brain and the nervous system the soul controls the functions of the body and thereby every healing process. This belief is fundamental to his views on hypnosis and suggestion. Among the many and divers topics which he discusses and illustrates from his personal experience is spiritualism. He does not believe in table lifting and "primitive materialization," but in the existence of a spiritual world, based on what he considers amazing results which he has witnessed during experiments with mediums.

It is possible to classify the author's treatise as profound, if not altogether sound; as exhibiting wide knowledge, if not always precise thinking, and as of philosophic interest, if not a strictly scientific or clinical text.

Die Tuberkulose des Kindes: Ein Lehrbuch aus der Kinderheilstätte Wangen im Allgäu. Von Dr. med. habil. Heinrich Brügger, Dr. med. habil. Reiner W. Müller und Dr. Maria Birkenfeld. Half-cloth. Price, $5. Pp. 340, with 300 illustrations. Georg Thieme, Diemershaldenstrasse 47, Stuttgart-O; imported by Grune & Stratton, Inc., 381 4th Ave., New York 16, 1948.

This German textbook on tuberculosis in children contains sections describing the pathogenesis, diagnosis and treatment of pulmonary lesions at considerable length. Shorter sections describe the various forms of extrapulmonary tuberculosis.

The clinical course and variations of primary and reinfection lesions in children are given in great detail. The material is illustrated with reproductions of many roentgenograms. Discussion of diagnosis and prognosis is sound and informative.

This book is rendered practically obsolete by the fact that it was written before the discovery of streptomycin. The authors were unable to review non-German literature after 1939. This has resulted in failure to consider recent advances in theories of pathogenesis.

This book cannot be recommended as a textbook for students or practitioners because of the shortcomings mentioned. It may be of interest to those who wish a detailed description of German pediatric tuberculosis work in the prestreptomycin era.

Child of Destiny: The Life Story of the First Woman Doctor. By Isabel Ross. Cloth, $3.50. Pp. 300, with portrait. Harper & Brothers, 49 E. 33d St., New York 16; 90 Great Russell St., London, W.C.1, 1949.

This is a warm and friendly portrayal of a truly unusual person, who probably would have risen to equally great heights had she entered the ministry or legal profession; one wonders that attitudes which confronted Elizabeth Blackwell ever actually existed and is grateful because they no longer exist.

Understanding of why this child of destiny finally took up the study of medicine is provided in the first five chapters, which recount the trials and troubles of her family during life in England, New York City and Cincinnati. Undoubtedly the demands of pioneer life combined with the somewhat stern, but still entirely acceptable, precepts of her adored father to strengthen the will that led finally to the study of medicine. She wrote, when, at the age of 24, this decision was made, "The idea of winning a doctor's degree gradually assumed the aspect of a great moral struggle, and the moral fight possessed an immense attraction for me."

And fight it was, with bitter obstruction presented at every turn. Despite sneers, snubs and rejection by the "good" people, Dr. Blackwell went through with her program, and from there

on the road was somewhat easier, though far from smooth. Always a campaigner, Dr. Blackwell was a militant leader in fields that were truly new at that time, including sex hygiene and the general campaign for moral reforms. One of her positive contributions to the profession that had disdained her was the establishment of the New York Infirmary for Women and Children in 1857, from which resulted similar institutions in England and in which she was backed by such prominent figures as Horace Greeley and Florence Nightingale. An abolitionist of long standing, she took an active part in medical and nursing service to the Union forces in the Civil War, helping to select the nursing staff for the Union armies.

Inspiration is contained on almost every page of this history of a remarkable woman, written as an intimate, personal account that brings in as counterfoils family members, friends and professional associates. Elizabeth Blackwell, dying at the age of 89 in the England from which she came, was a pioneer from whose ventures much good has sprung.

Diseases of the Fundus Oculi with Atlas. By Adalbert Fuchs, M.D. Translated by Erich Fronsburger, M.D. Edited by Abraham Schlossman, M.D. First English edition. Leather. Price, $30. Pp. 337, with 322 illustrations. The Blakiston Company, Division of Doubleday & Company, Inc., 1012 Walnut St., Philadelphia 5, 1949.

This book is an example of book making in its highest form. Most noteworthy is the inclusion of forty-four full pages of color plates showing conditions of the fundus in histologic detail and with the corresponding ophthalmoscopic appearance. These beautiful plates, made from original colored drawings rather than photographs and processed by Franz Deuticke in Vienna, are illustrative of the most adequate method of teaching through correlation of clinical appearance and microscopic findings. A full description of each plate is included in a separate section. It is unfortunate that this material could not have been arranged more conveniently for simultaneous perusal of each drawing and its corresponding description, but it is readily understood that technical difficulties would have added considerably to the expense.

The main body of the book is concerned with chapters on the various forms of the normal fundus, congenital anomalies, diseases of the optic nerve, glaucoma, diseases of the retina, diseases of the choroid, drüsen, tuberculosis, syphilis, myopia, tumors, detachment of the retina and injuries. There is a full description with adequate illustrations in black and white, including references to etiology, pathology and treatment of the various lesions. The author persists in the use of much of the older, largely discarded terminology, such as retinitis instead of retinopathy in noninflammatory diseases involving the retina. No effort is made to present any logical description of arteriosclerosis and hypertensive changes in the retinal vessels according to any of the modern classifications. In spite of these deficiencies, the volume is of great value because of its attempt to consider diseases of the fundus from a basic pathologic approach.

Principles of Human Genetics. By Curt Stern. Cloth. Text edition $5.50; trade edition $7.50. Pp. 617, with 198 illustrations by Aloha M. Hannah. W. H. Freeman and Company, 549 Market St., San Francisco 5, 1949.

Although written primarily for college use, this volume contains a large amount of material that will be of interest and assistance to the average physician. As the author suggests, it is important to be able to give sound advice on heredity to the many persons who turn to physicians for this help, and there can be no question that genetic counseling is becoming a field of increasing importance.

Somewhat familiar ground is covered in the chapters dealing with reproduction, genic action and chromosomes, but there are several chapters in the latter part of the book that physicians can read to advantage. Among these may be included prenatal interactions, sex determination, consanguinity, medicolegal applications of genetics, sex linkage, multifactor inheritance and heredity and environment.

Stimulus to more complete understanding of the topics presented is provided in problems at the end of each chapter. Also of value are extensive reference lists after each chapter. Especially well done is the final chapter, dealing with the origin of human diversity and the future of biologic evolution.

Morfologiske sperma- og testis-undersøgelser med særligt henblik paa forholdet mellem abnorm spermamorfologi og forekomsten af pathologiske forandringer i testikkelen. [By] Harald Oleson. [Morphologic Studies on Sperm and Testes, with Special Consideration of Relation Between Abnormal Sperm Morphology and Occurrence of Pathologic Changes in Testes.] With an English Summary. Denne afhandling er af det lægevidenskabelige Fakultet antaget til offentlig at forsvares for den medicinske Doktorgrad, København, 1948. Paper. Pp. 209, with 58 illustrations. Ejnar Munksgaards Forlag, Nørregade 6, Copenhagen, K, 1948.

The author presents his investigations and findings in determining whether, in men, there is any connection between the morphologic sperm picture and pathologic changes in the testes.

The material examined was obtained from cadavers of 187 persons, aged 15 to 83 years, who died sudden, natural deaths or by accident, murder or suicide. Smears were secured from the epididymides. Testis sections were made at three different levels. In addition, testicular biopsies from 64 patients were also secured for comparison with the cadaver material.

The author's conclusions were about as follows: 1. No increase in the number of abnormal spermatozoal heads can be demonstrated with advancing age. 2. Persons with sterility problems possess more than 20 per cent abnormal spermatozoa. 3. It has not been possible to demonstrate any decline in the diameter of the tubules with advancing age or any greater extension of degenerative changes in the age group over 50. 4. Pathologic changes in the testes are classified as: (a) developmental anomalies (testicular hypoplasia), (b) degenerative changes and (c) testicular fibrosis (and inflammatory changes). 5. A correlation was made of the number of abnormal spermatozoal heads in the semen and the weight of the testes; with decreasing weight of the testes there is a clear tendency toward an increasing number of abnormal spermatozoa in the semen. 6. The changes observed at biopsy are of such uneven distribution that discrepancies may be expected between the sperm findings and the biopsy indications.

Examination of testicular biopsies should be considered a valuable method in deciding whether a case of azoospermia is obstructive or not and in defining certain conditions which may prove suitable for treatment.

Biomicroscopy of the Eye: Slit Lamp Microscopy of the Living Eye. Volume II. By M. L. Berliner, M.D., Assistant Professor of Clinical Surgery (Ophthalmology), Cornell University Medical College, New York. Cloth. $35; $50 per set of two volumes. Pp. 737-1512, with illustrations. Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers, 49 E. 33d St., New York 16, 1949.

The second of two volumes dealing with biomicroscopy of the eye constitutes an attractive and accurate presentation of the inner parts of the eye. It is a combination clinical guide, textbook and atlas on slit-lamp examination of the living eye which features concise descriptions of practically every known condition of the iris, lens and vitreous. It will be found to be of unusual clinical usefulness to the ophthalmologist who wants to perfect himself in this branch of ophthalmologic examination. The descriptions are clear and to the point, with the biomicroscopic appearance beautifully illustrated. The eight-color plates faithfully reproduce the colors of the originals. The 11 page bibliography is exceptionally complete. This is the only thorough and comprehensive atlas on this subject in the English language, and it merits a place in every ophthalmologist's library.

Fundamentals of Otolaryngology: A Textbook of Ear, Nose and Throat Diseases. By Lawrence R. Boies, M.D., Clinical Professor of Otolaryngology, Director of Division of Otolaryngology, University of Minnesota Medical School, Minneapolis, and Associates: Charles E. Connor, M.D., and others. Cloth. $6.50. Pp. 443, with 184 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C. 2, 1949.

This clearly written, handsomely published book is the outgrowth of a plan for teaching the undergraduate medical student the fundamentals of otolaryngology. It has been prepared with the competent assistant of several collaborators. Although it is not intended as a complete reference book, the subject matter is condensed in useful form, the material is up to date and the illustrations emphasize significant points. References appear at the end of the clinical chapters and refer mainly to the literature of recent years. The book should prove popular as a teaching vehicle throughout the medical schools of the country. It is recommended, as well, for the day by day requirements of physicians who are not specialists.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

POLIOMYELITIS CARRIERS

To the Editor:—I am chief of staff of an eye, ear, nose and throat hospital, and a committee has asked us to take over patients convalescing from anterior poliomyelitis for physical therapy. What are the probable chances of these patients being carriers of poliomyelitis, and, if they were, how long would they continue to be carriers? I understand that the general hospitals in our city are going to take convalescent patients for physical therapy, for they do not consider them contagious or carriers of the disease. Are the general hospitals in Chicago and other cities taking such patients? In hospitals which have done so, what has been the reaction of the public?

D. H. Anthony, M.D., Memphis, Tenn.

ANSWER.—Poliomyelitis virus has been found in the stools of recognized patients as well as unrecognized carriers over a period of two to four weeks, occasionally as long as twelve weeks. In the nasopharyngeal secretions the virus may be demonstrated for a shorter time, usually not more than three to five days after onset. Its duration in the nasopharyngeal secretions of persons with unrecognized infections is unknown. The incubation period is usually seven to fourteen days, and the period of greatest communicability apparently is covered by the latter part of the incubation period and the first week of the illness. It must be realized that during an outbreak of poliomyelitis the number of unrecognized carriers in the community greatly exceeds the number of diagnosed cases. A total of 1,242 hospitals now admit patients with acute and convalescent poliomyelitis. The public has been enthusiastic about hospitals receiving poliomyelitis patients, and to our knowledge no fear has been engendered by this action.

DILATION FOR URETHRAL STRICTURE

To the Editor:—A physician sustained, while in the service in March 1944, multiple fractures of the pubis with traumatic rupture of the posterior urethral opening. Subsequently a stricture formed which required dilation from time to time. There had been recurrent attacks of cystitis. In February 1949 (five years after the initial trauma), there was still a severe stricture (posterior urethral opening) with obstruction at the bulb detected with the aid of a filiform bougie F16. All the symptoms of stricture with recurrent cystitis still exist. Dilation has been done at intervals of one, two, three or six months. Will this stricture be permanent, or is there need for further dilation in view of such frequent previous treatment, or will dilation be necessary for the remainder of the patient's life?

Louis L. Bellaichy, M.D., Woodside, L. I., N. Y.

ANSWER.—Traumatic strictures such as described associated with frequent need for dilation and recurrent attacks of cystitis are common. The most common problem in controlling infection and protecting the upper part of the urinary tract is regular dilation of the strictured area. If the posterior urethral narrowing is the predominant factor, resection of the vesical neck transurethrally will frequently be of benefit. If the bulbomembranous stricture is the paramount cause of trouble, frequent dilation is usually the most helpful form of treatment; in some instances an internal urethrotomy has been performed with good results. The patient will probably require dilation at regular intervals the rest of his life.

SALT-FREE DIET AND EPILEPSY

To the Editor:—Is there any objection to the use of the salt substitutes in a patient who has had several grand mal epileptic seizures on the last day of or the day after her menstrual period? This girl is 21 and healthy. Diphenylhydantoin sodium, 1½ grains (98 mg.) given three times daily, prevents epileptic seizures. Failure to use medication resulted in one severe seizure during her pregnancy. I am having difficulty persuading her to eat a salt-free diet. Suggestions regarding her care will be appreciated. A family history of epilepsy does not exist.

Elmer G. Koehler, M.D., Elkhart, Ind.

ANSWER.—A constant salt intake is necessary for the epileptic patient who is taking bromides; otherwise, salt does not play a role in epilepsy, and maintenance of a salt free or other special diet is unnecessary. Since the patient is symptom free when taking diphenylhydantoin sodium, she needs only to follow the usual rules for maintenance of good health.

CALCINOSIS

To the Editor:—Please give a brief outline of the causes, perversions of function symptoms, and treatment of calcinosis circumscripta?

Walter E. Vest, M.D., Huntington, W. Va.

ANSWER.—Calcinosis is a rare condition in which abnormal deposits of calcium salts are formed in the skin, subcutaneous tissue and other parts of the body. There are two recognized forms: (1) calcinosis circumscripta, in which the abnormal deposits are limited to the skin and subcutaneous tissue, and (2) calcinosis universalis, in which tendon sheaths, nerves and muscles may be the site of calcification.

The cause of the disease is unknown. Calcinosis circumscripta occurs more commonly in female subjects and in the older age group. The disease may occur alone or in association with other conditions, especially scleroderma and Raynaud's disease. Atkinson and Weber reported that in 135 cases of calcinosis circumscripta there were vasospastic lesions of the extremities in 52 per cent. This would indicate that vasospasm plays some part in the causation of the disease. At the Mayo Clinic, however, of 200 patients with Raynaud's disease only 2.5 per cent showed abnormal calcification. Some other factor, therefore, must be looked for to explain the calcification. Kleinmann found that injured tissues and tissues in a necrotic area have an alkaline reaction. It is known that alkalinity favors the precipitation of calcium salts in vitro. This would explain calcification in myositis ossificans in which injury and hemorrhage precede calcification. In most cases of calcinosis, however, there is no history of trauma. Hoffmeister suggests that calcification in arteries and other tissues is due to the low carbon dioxide tension of arterial blood, which produces a relative alkalinity favoring precipitation of calcium salts. Burge and his associates advance the hypothesis that active, injured and dying tissues are electronegative to inactive, uninjured and sound tissues. Calcification may be due to a combination of positively charged calcium ions of the blood with the negatively charged phosphate ions of the injured tissue. Calcinosis has been explained, therefore, on the basis of local tissue changes, since abnormal calcium metabolism has never been proved in this disease. Calcium, phosphorus and phosphatase levels in the blood are always within normal limits.

In calcinosis circumscripta the clinical picture is clear. The deposits are usually symmetric, and the extremities are exclusively affected, particularly the upper extremities and fingers (sclerodactylia). It affects mainly middle-aged persons. The deposits are usually about the joints, but not in the joints or joint capsule, only the soft tissues. Usually there are no constitutional manifestations. The chief complaint is frequently a nodule under the skin. The nodules are partially movable and painless at first. Later, the overlying skin becomes inflamed and tender, finally breaking down and discharging a chalky type of material which contains calcium carbonate and calcium phosphate. The ulcers produced are deep and painful but heal spontaneously. Lesions about the joints may cause considerable limitation of motion, but muscle atrophy is rare. The course in calcinosis circumscripta tends toward gradual resorption. The prognosis is in general favorable.

Therapeutic efforts in this disease have been directed to prevention of further deposits of calcium and decalcification of deposits already present. "Cures" have been reported with numerous and varied treatments. Disodium phosphate has been used in an effort to lower the absorption of calcium from the gastrointestinal tract. If a negative calcium balance is created, the skeleton will use the calcium deposited in the skin for the production of bone. This form of treatment has been more successful in growing children. Kennedy has reported a cure with the use of the ketogenic diet, which by its high fat content forms calcium soaps in the gastrointestinal tract. These are not absorbed, and a negative calcium balance is thus created. Skosogorenko, in an effort to produce a negative calcium balance, used ammonium chloride and noticed lowering of the blood calcium level, increased excretion of calcium in the urine and diminution of the size of the deposits. Following the same line of thought many investigators favor the low calcium and low vitamin D diet. If the disease is associated with vasospastic lesions, sympathetic block and removal of the upper thoracic ganglions should be tried.

As for local treatment, if any of the calcified nodules cause pain or limitation of function they may be removed surgically. When the calcium deposits are extensive and operation is considered, prophylactic use of sulfadiazine or penicillin is recommended. Spontaneous cures often occur, and for this reason it is difficult to evaluate treatment until more is known about the pathogenesis of the disease.

DIFFICULT DIAGNOSIS OF POSSIBLE FACTITIOUS CONDITION

To the Editor:—A healthy 13 year old girl fell on her outstretched hand in October 1938, and while she was prone her wrist was tread on. Swelling and pain developed over the distal part of the ulna. Roentgenograms did not show any abnormalities, the right wrist being used for comparison. Supportive treatment and wet dressings were given. The process subsided somewhat in a few days, and then pain and disability recurred. About one week following injury the patient began to have a fever, with a daily rise of temperature to 102 F. at first and later as high as 104 F. Fever was accompanied with a fairly circumscribed area of heat and redness on the dorsum of the wrist, which on the following day would appear oedematous with a slight but definite bumpy subcutaneous thickening. Pain continued to a moderate degree and was aggravated by flexion and extension of the wrist. There was no lymphangitis or adenitis. Fever persisted for about ten weeks with no response to sulfanilamide drugs or penicillin. Blood cell counts, sedimentation rates and results of urinalysis were normal. Several blood cultures were negative; roentgenograms of the chest and repeated roentgenograms of the wrist were normal. Roentgenograms of the nasal sinuses showed thickened mucoid clouding, but sinus puncture returned no pus and cultures were negative. A faint systolic murmur was detected, but the electrocardiogram was normal. Results of examination for tuberculosis, brucellosis and typhoid were negative. She was eventually given carcinomycin, receiving fifteen 500 mg. doses in five days. Four days after this treatment had been discontinued the fever subsided and did not recur. Thereafter the redness and heat in the wrist were not so apparent, but there continued to be a fusiform rubbery swelling, particularly over the extensor pollicis longus tendon, which was moderately painful and rather tender. In the latter part of January 1939 the dorsum of the wrist was explored, with the tentative diagnosis of chronic tenosynovitis. Several small collections of old blood were found in the subcutaneous fat and fascia, and, although most of the tendon sheaths were opened, no abnormalities were found. All of the hemorrhagic areas were cleaned out, cultured and examined pathologically with negative results. Subsequent clotting and bleeding time determinations and thrombocyte counts were within normal range. The result of the tourniquet test for capillary fragility on the other arm was negative. For three weeks after operation the patient was relatively asymptomatic and there was an appreciable tenderness of the wrist. Then the process recurred—between the upper pole of the incisional scar and the elbow—redness, pain and heat followed by signs of subcutaneous hematoma. It is accompanied now with an evening temperature rise to 99-100 F. The patient has been receiving rutin and vitamin C in fairly large doses for about two weeks with no appreciable effect. Several surgeons, pediatricians and internists have seen the patient and have been unable to give a diagnosis. James V. Halloran, M.D., Greenwich, Conn.

ANSWER.—It would seem that the lesion in the girl's wrist could be explained by an infectious process superimposed on a traumatic one, a neoplastic lesion or a factitial process. Under the most ideal conditions the bacteriologist cannot always isolate the infecting organism. Especially is this the case if the lesion has been treated with antibiotics. Further bacterial studies of material from the lesion, including cultures under aerobic and anaerobic conditions with special cultures for brucellosis and tuberculosis together with guinea pig inoculations, might help. One with negative biopsy results does not definitely exclude the possibility of a neoplastic process, as too often representative tissue is not obtained at the time of operation or the microscopic section does not include a diagnostic field.

The only constitutional observation mentioned is a temperature of 102 to 104 F. which lasted almost ten weeks. One would expect a prolonged fever of this degree to be accompanied with weight loss, lack of appetite, secondary anemia, increased leukocyte count and an elevated sedimentation rate. One would like to know whether an attendant was present when the thermometer was in the patient's mouth. It is possible that a diagnosis in this case will eventually be established only by prolonged observation together with the repetition of many roentgenograms and tests.

MULTIPLE ENCHONDROMA AND PAGET'S DISEASE

To the Editor:—What is the treatment of multiple enchondromas in all fingers of both hands in an 8 year old boy? Is there any treatment which will limit in any way the progress of Paget's disease (generalized) in a 40 year old woman and Paget's disease in only the left humerus in a 55 year old man? P. R. Dunn, M.D., Montreal, Canada.

ANSWER.—1. Multiple enchondroma in the bones of the fingers of both hands cannot be completely eradicated. The patient should be carefully followed, and, if the tumors show evidence of destructive growth or deformity with impairment of function, they should be treated by excision with or without bone grafting. Roentgen therapy is of no value. 2. The cause of Paget's disease is unknown, and there is no treatment which in any way limits the progress of the disease. Roentgen therapy is sometimes of value in decreasing pain. Salicylates can also be given freely. A certain number of patients show sarcomatous changes in the affected bones, so that it is probably well to take roentgenograms of the affected areas yearly.

PAIN IN CANCER OF UTERUS

To the Editor:—A patient suffering from adenocarcinoma of the fundus of the uterus is unable to take any derivative of opium for pain, and to date 100 mg. doses of unperidine hydrochloride seems to be sufficient. What would you recommend for the control of pain should unperidine hydrochloride ultimately prove inadequate? M.D., New York.

ANSWER.—It must be assumed that this patient has been subjected to approved methods of treatment and that these have failed to arrest the progress of the disease. Endometrial carcinoma most frequently metastasizes to distant regions of the body and causes death before the discomfort is too severe. If there has been extension of the disease into the serous pelvic cellular tissues, then pain might be due to occlusion of the ureters with the resulting hydroureterosis and hydronephrosis or fixation of the parametrial tissue with sacral nerve pain. If pyometra or hematometra is present, it would be advisable to probe the cervix to be sure there has been no retention. An intravenous pyelogram should then be made to determine urinary tract complication. If roentgen therapy has not been utilized, it should be employed, as it frequently controls pain as well as progress of the disease. Subarachnoid alcohol injection as described by Greenhill and Schmitz (*Am. J. Obst. & Gynec.* 31:290 [Feb.] 1936) has a definite place in the control of intractable pain. Should all of these methods fail, then posterior root section might be resorted to.

SWELLING OF LOWER EXTREMITIES

To the Editor:—Please discuss the status of obese women of middle age who complain only of an accumulation of water in the lower extremities. They usually have moderate anemia. Examination of the urine and blood and tests of renal function do not reveal abnormalities. The basal metabolic rate does not exceed normal limits; it may be low. I have tried thyroid with limited success; the addition of estrogens, particularly in women with symptoms of estrogen deficiency, has helped. However, salt-poor diets and mercurials for diuresis have produced the best results. A water tolerance test and a trial injection of adrenal extracts did not appear to affect the complaints. R. J. Root, M.D., Savannah, N. Y.

ANSWER.—The cause of swelling of the lower extremities can be determined only by careful examination of the patient. It may be due to cardiac or renal disease, and it may be caused by obstruction to the venous or lymphatic return. Obstructions should be considered when the swelling is unilateral, for example following the thrombophlebitis occasionally associated with childbirth. Sometimes, definite cardiac or renal causes cannot be found and careful examination fails to reveal any obstruction to the venous return. Even examination of the blood may not reveal abnormal variations. This type of swelling is common in women and appears to be worse during the warm months of the year. If careful examination fails to reveal any definite cause and the patient's health appears to be good, the swelling may be disregarded. Often this swelling is more pronounced preceding the onset of menstruation. At this time it is not uncommon for women to gain as much as 5 pounds (2 Kg.), largely because of retention of water and salt. The administration of thyroid is usually not helpful, and it is probably unwise to subject such patients to a diet low in salt. The administration of estrogen usually does not reduce the swelling. It may, in some instances, actually make it worse.

BERYLLIUM WOUNDS

To the Editor:—Several references have been published lately on the poisonous effect of beryllium dusts when they are introduced beneath the skin. I have seen no advice as to the immediate treatment of such wounds. I suppose that scrubbing them out completely with any antiseptic solution should remove the dust completely. Please give information on the immediate treatment of such wounds. M.D., California.

ANSWER.—The references to beryllium beneath or in the skin have been with respect to slivers of glass from broken fluorescent lighting tubes which were lined with a beryllium salt. Around the sliver of glass, coated with beryllium salt, there forms a nodule which on biopsy shows a sarcoid-like structure (Boeck). There is no inflammatory reaction in the surrounding tissue. The nodules may be differentiated from sarcoid by the following factors: (*a*) the history of the patient's having worked with beryllium; (*b*) the history of the patient's having been cut by beryllium-coated glass; (*c*) there is usually only a single lesion and only at the injured site, and (*d*) there is absence of osseous involvement in the distal phalanges often seen in true sarcoid. Since inhaled beryllium dust causes pulmonary granulomatosis, it is likely that if it enters the skin through a cut or abrasion it can cause sarcoid-like nodules at the site of entrance. The treatment consists in surgical excision of the nodule. Pre-

vention consists in immediate scrubbing of wounds made by or likely to be contaminated with beryllium and removing all foreign matter from them.

Beryllium is no longer used in the new fluorescent lighting tubes.

EPILEPSY

To the Editor:—A patient, now 22 years of age, was given a diagnosis of cryptogenic epilepsy at the age of 16. At that time he had had three generalized seizures within five months. His encephalogram showed a general ventricular enlargement, apparently due to cerebral atrophy. The electroencephalogram suggested a deep left temporal or subtemporal epileptogenic lesion. Since 1945 the condition has been controlled with diphenylhydantoin sodium, 1½ grains (90 mg.) three times a day and phenobarbital, ½ grain (32 mg.) in the morning and 1½ grains in the afternoon. In March 1947, after twenty-four hours without any medication, the patient had a grand mal seizure but has had no attacks since then. He had an appendectomy without complications last year and is apparently well in every way. Dosage has gradually been reduced to 1½ grain diphenylhydantoin sodium once daily and ½ grain phenobarbital in the morning and 1 grain (65 mg.) in the afternoon. What is the prognosis? How fast should one proceed in withdrawing all medication? Would a repeat electroencephalogram be of any value? Does it ever revert to normal? Is such a patient safe in driving a car or piloting an airplane? What is recommended with respect to marriage and offspring?

W. Grubis, M.D., St. John's, Newfoundland.

ANSWER.—A diagnosis of cryptogenic (genetic) epilepsy seems hardly consistent with the observation of general ventricular enlargement and an electroencephalographic focus of abnormality. Three generalized convulsions in a 16 year old patient should not be sufficient to cause a pathologic condition of the brain, and, if the atrophy and the focal lesion existed before the onset of epilepsy, then it would be a case of symptomatic rather than cryptogenic epilepsy. This question is principally important in answering the last question. If the epilepsy is from an acquired cerebral lesion, the chances of epileptic offspring are less than if the origin were "cryptogenic."

Repeated electroencephalograms help one to confirm the original diagnosis of a temporal lesion and to answer the questions about prognosis and elimination of medication. An abnormal electroencephalogram may revert to normal, although this is less likely in neuropathologic conditions. In view of the long remission of seizures, the prognosis is good, although only a trial without medication will determine whether it can be discontinued permanently. If trial is undertaken, the present dose should be reduced by half and medicine eliminated at the end of a month. Operation of a moving vehicle would involve less risk if the person were to continue medication. Rules with respect to the licensing of operators differ for different states and countries.

CARBON DIOXIDE IN AIRCRAFT

To the Editor:—In commercial passenger aircraft, solid carbon dioxide (dry ice) is used as a refrigerant for such items as ice cream and milk. About 12 pounds (7 Kg.) are used on each flight. This slowly melts, liberating carbon dioxide. Many pilots worry about this condition in pressurized aircraft—the possibility of a sufficient concentration of carbon dioxide accumulating in the cabin and cockpit as to cause drowsiness and headache. Since in the pressurized DC-4's and the Constellations the pressurized air is partially used over and over again, they feel that the carbon dioxide from evaporation, plus the expired carbon dioxide from the crew and passengers, might lead to a dangerous concentration. I plan to obtain samples of air from aircraft for analysis. 1. What is the minimum concentration of carbon dioxide that will produce symptoms? 2. What is the maximum concentration of carbon dioxide that the human being can breathe and still remain conscious? 3. Is a maximum concentration of 3 per cent sufficient to prove fatal? 4. What is the rate of evaporation of carbon dioxide in solid carbon dioxide? 5. How much volatile carbon dioxide is compressed in 1 pound (0.05 Kg.) of solid carbon dioxide?

Herbert F. Fawcett, M.D., Chicago, Ill.

ANSWER.—In six experiments men breathed recirculated air for periods of thirty-five to seventy-two hours in sealed spaces of such size as to provide 500 cu. ft. (14 cu. M.) of air volume per man. Exposures in atmospheres of carbon dioxide concentrations up to 5 per cent and reduced oxygen concentrations as low as 12 per cent did not seriously impair the physical condition and efficiency of the subjects as evaluated by biochemical, physiologic and psychologic tests. Minor symptoms of headache, nasal congestion and dryness of the throat quickly disappeared when outside air was breathed. In an atmosphere of 5 per cent carbon dioxide and 12 per cent oxygen healthy men are able to maintain an adequate oxygen pressure in the lungs and blood and tissues because an increase in pulse rate (circulation) prevents a corresponding reduction in oxygen concentration in lungs and blood despite the decrease in ambient oxygen 21 to 12 per cent. Consequently, in long exposures to atmospheres of high-carbon dioxide content (5 per cent) it is not necessary to maintain the oxygen concentration of the recirculated air at the normal value. Concentrations of carbon dioxide much above 5 per cent are not well tolerated. This value appears to be a limiting level for healthy young men if exposures are prolonged.

Question 3.—Carbon dioxide in excess of 10 or 11 per cent induces ataxia and unconsciousness, according to Carl J. Wiggers (Physiology in Health and Disease, Philadelphia, Lea & Febiger, 1944, p. 424).

Question 4.—The rate of evaporation of carbon dioxide cannot be calculated without additional information. Recording the time it takes for a certain amount to evaporate under known temperature should give the necessary data.

Question 5.—It is calculated as 8.2 cu. ft., or 231 liters, per pound at a temperature of 20 C. and 760 mm. mercury.

Occupation and Health, volume 1, of the International Labour Office, states that when the content of the air in carbon dioxide exceeds 4, 5 or 6 per cent acute symptoms are produced, such as difficult breathing, feeling of cold, headache, dilatation of the peripheral vessels and loss of consciousness after a short time. According to Hill, a proportion of 3 per cent suffices to induce decided dyspnea with a slight headache; if the proportion is 5 to 6 per cent, the dyspnea is pronounced and accompanied with headache and sweating; a proportion of 10 per cent for only a minute sets up headache, visual disturbance, tremor and loss of consciousness. A proportion of 0.5 per cent, breathed for a long time, causes real discomfort according to this publication; the discomfort is more pronounced and rapid in an atmosphere containing a proportion of 1 per cent.

ACUTE HEMORRHAGIC NEPHRITIS

To the Editor:—I have seen about 24 patients with acute hemorrhagic nephritis. Some of these definitely had scarlet fever; some of them had no rash. In the latter, usually there was a rather sudden onset with frontal headache, occasional vomiting, stomach ache and refusal to eat or drink much. Examination reveals temperatures of 103-104 F., moderately red throat and sometimes a few suspicious strawberry spots on the tongue. The urine initially is normal. In a few days to two weeks, blood casts and albumin appear in the urine. Only a few have had elevated blood pressure. In many the condition clears up readily and in some rather slowly. The initial infection has usually been treated with sulfadiazine or penicillin. Some patients were seen late and received no treatment other than bed rest. What is your opinion as to the use of aureomycin in these cases in (1) the acute stage and (2) after disappearance of fever but urinary abnormalities? What is your opinion of partial tonsillectomy as a possible prevention of kidney complication? I feel that the disease is definitely a streptococcic infection.

L. D. Downs, M.D., Milbank, S. D.

ANSWER.—An epidemiologic study of the outbreak described might disclose some interesting facts. On the basis of the information presented, there appears to be no scientific reason for one's prescribing aureomycin either in the acute stage or at a later period. It does not seem likely that antihistaminics would be of value in controlling what seems to be a streptococcic infection. A further study would be required to determine the possibility of a virus infection as a factor.

CHRONIC RASH ON ANKLES

To the Editor:—A 39 year old woman has had a scaling rash on the anterior aspects of both ankles for twenty years. The past history is noncontributory except the patient had a thyroidectomy in 1943 complicated by laryngeal stridor requiring a permanent tracheotomy tube. Examination revealed mild neuroglaucia with mild generalized xeroderma. The anterior aspects of both ankles showed a localized, lichenified, hyperpigmented, thickened, plaquelike eruption. A diagnosis of moderate hypothyroidism with dermatitis venenata was made. Patch tests were done with various suspected allergens. All results were negative. The patient said that the eruption is made worse by wearing nylon stockings and that at the time of activity of the eruption her nylon stockings shred and tear. The stockings were brought into the office and this fact was confirmed, the area of shredding being in opposition with the dermatitis. What chemical principles are involved in the destruction of the nylon fabric? Why does the acute exacerbation of the dermatitis not occur after the wearing of nylon stockings?

Marvin H. Wiser, M.D., Buffalo.

ANSWER.—The description of the lesions in this case suggests either lichen simplex chronicus or pretibial localized myxedema. They can be differentiated with certainty by biopsy, for in localized myxedema mucin is present in the subcutaneous tissues. The shredding of that portion of the stocking which is in apposition to the lesions might be due either to chemicals used for topical application or to a combination of mechanical factors, such as tears from the scales on the skin or from the stress on the hose due to the elevation of the lesions.

ATTACK OF UNCONSCIOUSNESS

To the Editor:—A white man aged 64, who has been hypertensive for several years, having a blood pressure of 150 systolic and 100 diastolic up to 190 systolic and 120 diastolic, had an attack of unconsciousness in his office. He had been in good health except for attacks of angioneurotic edema affecting the face, lips or extremities; diphenhydramine hydrochloride (benadryl®) therapy decreased the frequency of attacks. He had not been taking benadryl® prior to onset of unconsciousness. He recovered consciousness within a half-hour after he was brought to the hospital, although he was confused and had loss of memory for recent events for a few hours. Blood pressure was 190 systolic and 100 diastolic. The results of physical examination were normal except for cardiac enlargement and a liver palpable 3 fingerbreadths below the costal margin in deep inspiration. Eye ground examination showed grade III hypertensive retinopathy, with a fresh hemorrhage in the left eye ground at 6 o'clock. The patient recovered completely, but severe swelling of the tongue developed and later of the lips, beginning on the day after admission. (The tongue had been lacerated when the patient collapsed, but a witness stated that there had been no tonic or clonic movements.) Triprolidine hydrochloride (pyribenzamine®), 50 mg. four times a day, appeared to alleviate the angioneurotic edema. Blood pressure was as low as 130 systolic and 90 diastolic during his stay at the hospital. The electrocardiogram showed diphasic T waves in lead 1 and lead CR 4. The QRS segment in lead 3 was splintered; otherwise the electrocardiogram was within normal limits. A sulfobromophthalein sodium test (5 mg. per kilogram of body weight) revealed 2 per cent retention at the end of 45 minutes; the result of the cephalin flocculation test was negative; the blood cell count, urine, blood urea and blood sugar were normal. The patient has been well for one month following the attack, the blood pressure varying between 140 systolic and 100 diastolic and 182 systolic and 100 diastolic. Could this episode of unconsciousness have been due to angioneurotic edema, or is it more properly diagnosed as an encephalopathy due to hypertension?

Robert A. Straughn, M.D., Madison, Wis.

ANSWER.—Possibly the patient had some minor vascular accident. This might have been a small, subintimal hemorrhage in a cerebral vessel, a small hemorrhage in the adventitia or a small hemorrhage into the brain substance. The hemorrhage in the left eye suggests the possibility of increased capillary fragility, with a possible minute hemorrhage in the brain. It would be interesting to do tests for capillary fragility.

With the patient's past history, some allergic response also is suggested. Many such central nervous system manifesations of allergy have been reported. When there are so many vascular manifestations of allergy elsewhere, it is reasonable to suppose that they might also happen in the central nervous system. The swelling of the tongue and later the lips would substantiate such a possibility, as well as the fact that he had had previous intermittent attacks of angioneurotic edema. It is obvious that, except in the rarest instance, one would not expect to have any objective anatomic evidence of an allergic phenomenon in the central nervous system. There was no fall in blood pressure, and the electrocardiographic changes were too equivocal to indicate a coronary attack.

ALLERGY, BURPING AND SYPHILIS

To the Editor:—A woman now 34 in routine examination was found to have a positive serologic reaction. A letter from her previous doctor said that she had been treated for syphilis continuously from Sept. 17, 1938 to March 9, 1940. She had had six months' treatment before she saw me. During this period weekly doses of bismuth salicylate were alternated with neoarsphenamine hydrochloride. During 1941 and 1942 she had had two courses yearly of ten doses of bismuth salicylate. At that time she was advised to take no further treatment. Her Kahn reactions remained consistently positive during all this time, but spinal fluid observations on two occasions were normal. When I first saw her she was 69 inches (175 cm.) tall and weighed 139½ pounds (59 Kg.). Her chief complaint was "gas burping" for about a year. She said that it was almost impossible to gain weight although she ate a large amount of food. She is allergic principally to house dust. She showed remarkable response to desensitizing doses of house dust antigen. She has an irreducible amount of allergy symptoms and is comfortable with an occasional phenindamine tablet and diphenhydramine hydrochloride capsule. Does she require any further treatment for syphilis? The results of other laboratory tests are not significant except for the following observations: (1) spirochaetosis of all colonic segments, (2) a faint to slight trace of albumin in the urine, (3) 10 to many pus cells per high power field in the urine, (4) moderate numbers of active trichomonads in the urine, (5) 82 to 85 per cent hemoglobin, (6) 9,700 to 5,000 white blood cells, (7) 1 to 2 per cent eosinophils and (8) a basal metabolic rate of +6 to 11 per cent. Does her allergy influence her serologic reaction? Would you suggest another spinal tap? Would you suggest a stool analysis for undigested food?

Harry H. Kay, M.D., Beverly Hills, Calif.

ANSWER.—A rise in the quantitative titer of the blood from 4 units to 20 units in a year is not necessarily an ominous sign of syphilitic relapse. The blood should be re-examined at intervals of six to eight weeks, and only if the titer continues to rise progressively should one consider another examination of the spinal fluid and more antisyphilitic treatment. Her "allergy" and "burping" have no relationship to the syphilis.

CHRONIC RHINITIS

To the Editor:—Please forward information on injections for chronic rhinitis. Is there any new drug for this condition? My patient is unable to take most drugs orally because of chronic colitis.

Harold N. Baker, M.D., Rochester, N. Y.

ANSWER.—Several fatty acid derivatives can be employed as sclerosing solutions for reduction of the swelling of the middle and inferior turbinates in chronic hypertrophic rhinitis. These sclerosing solutions consist of a 5 per cent solution of sodium morrhuate; a preparation called sylnasol® (a 5 per cent solution of the sodium salts of certain of the fatty acids of the oil extracted from a seed of the psyllium group) and a 5 per cent solution of monoethanolamine oleate.

The technic of administering the three sclerosing agents is essentially the same. According to Thacker (*Arch. Otolaryng.* 36: 336 [Sept.] 1942) the injection is made after obtaining adequate topical anesthesia of the turbinate to be treated. The submucosa is punctured with a long no. 22 hypodermic needle and the solution injected as the needle is withdrawn. Not more than 0.5 cc. of the fatty acid solution is injected at the first treatment. Cotton pledgets should be used to protect the mucosa from accidental overflow of the solution. Only one side of the nose is treated at a single sitting; the other side may be treated after a week has elapsed.

CARCINOMA OF TONGUE

To the Editor:—Five years ago a 65 year old woman had a small ulceration of the lateral border of the mobile portion of the tongue which was electrocoagulated. She did not complain until five months ago, when her family learned she had been bleeding an ulceration on the tongue. A doctor sent her to the roentgenologist, who gave her a twenty-five day course of roentgentherapy. She had 2,500 r externally and 2,000 porcelly (2 mm. of copper, 1 mm. of aluminum distance 50 cm., 220 kilovolts, 10 milliamperes). The irradiations were given daily, one day externally and the other porcelly. Her condition did not improve, and the induration around the ulceration became larger; the tongue was partially fixed. The pain got worse, so that the patient could not take solid food. Several doctors in consultation decided that the lesion was not operable. Her present condition is good generally, but there is an oval ulceration on the lateral border of the free portion of the tongue, 5 by 2 by 1 cm. deep. There is induration on the floor of the mouth and half of the tongue but no bleeding. The ulceration is rather clean, and the cervical nodes are large. Is interstitial irradiation with radium justified in this case? Have you any other suggestion? The diagnosis is epidermoid carcinoma (spindle cell) grade III (Broders).

Haroldo G. Juacaba, M.D., Brazil.

ANSWER.—The prognosis appears hopeless. Interstitial radium or radon therapy would add to the patient's discomfort, would not result in a cure and therefore is contraindicated. On the basis of what has been stated, it would appear that more external radiation is possible, with an air dose of about 4,000 to 5,000 r through a submental port with the equipment mentioned. Total elapsed time for the treatment should not exceed four weeks and preferably should be given in about three weeks. The metastatic lymph nodes, if not included in this field, may be treated separately with up to 3,000 r air dose in a three-week interval. Good oral hygiene and even treatment with penicillin or other antibiotics, either topically or parentally, often relieve some of the pain and discomfort due to secondary infection.

LUPUS ERYTHEMATOSUS

To the Editor:—Becker (*Proc. Soc. Exper. Biol. & Med.* 69: 247 [Nov.] 1948) describes inhibition of the Shwartzman phenomenon in animals by premedication with nitrogen mustard and benzol and by spray roentgen irradiation. This is interpreted as an inhibition or depletion by these substances of the hypersensitivity of the reticuloendothelial system. Nitrogen mustard is suggested as a therapeutic agent for several of the "collagen" diseases. I have a patient with disseminated lupus who is becoming progressively worse. What information do you have relative to this new approach to this disease?

Keith Ault, M.D., Burlingame, Calif.

ANSWER.—As far as is known, nitrogen mustard has not been used in the treatment of lupus erythematosus disseminatus. Becker's suggestion that this compound be employed in the treatment of this disease was based on the theoretical interpretation of his experiments with nitrogen mustard on the Shwartzman phenomenon. A much more promising lead in the treatment of lupus and other "collagen" diseases is the use of pituitary adrenal corticotropic hormone (ACTH) and cortisone (a steroid) employed by Hench and associates of the Mayo Clinic in the treatment of rheumatoid arthritis and rheumatic fever.